SD-TR-81-32

HAZARDOUS WASTE INVENTORY AND DISPOSAL ASSESSMENT FOR THE SPACE SHUTTLE PROJECT

VOLUME III. APPENDICES

FINAL REPORT

SCS ENGINEERS
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LONG BEACH, CALIFORNIA 90807

JULY 1981

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PREPARED FOR
DEPARTMENT OF THE AIR FORCE
HQ SPACE DIVISION (DEV)
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PREFACE

This report was prepared by SCS Consulting Engineers, Inc., Long Beach, California 90807. This Hazardous Waste inventory and Disposal Assessment was initiated by the Air Force to meet the requirements of the Resource Conservation and Recovery act of 1976 as amended in 40 CFR 261 & 264 May 19, 1980, and the California Administrative Code, title 22 Division 4. The report will be used as a reference document to the 1978 Space Shuttle Supplement 1. It will also be used for hazardous waste reporting to EPA/California, for hazardous waste management planning, and for engineering design concepts for the STS.

The report is in three volumes. Volume I is an inventory of hazardous wastes likely to be generated by the West Coast STS project. Volume II is an analysis of recycle, treatment, and disposal options for managing the projected STS Wastes. Volume III is an appendix with reference material for Volume II.

This work was accomplished between September 1980 and June 1981. Mr. John R. Edwards, Headquarters Space Division was the Project Officer.

This report has been reviewed by the office of Public Affairs (PA) and is releasable to the National Technical Information Service (NTIS). At the NTIS it will be available to the general public, including foreign nations.

This report has been reviewed and is approved for publication.

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Volume III contains the appendices cited in Volume II of this report. Appendix A presents the STS inventory in Tables grouping the wastes according to treatment categories and geographical locations. Appendices B, C, and G document California regulations concerning hazardous waste, while Appendix D lists the hazardous waste haulers registered in California. Appendices E, F, and H describe California's programs and permitting procedures for handling hazardous waste, and Appendix I outlines the major elements of an environmental

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impact statement/report. Appendix J documents the present factors and costs used by the City of Oxnard to determine the rates charged for discharging to the POTW.

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STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA /CAL.		CAL. COMP. CLASS
0[1]	SO	CONTAMINATED FREON	L	WASHING OF SCAPESUITS	1	T	T	6B
17	EW	WASTEWATER FROM EEW&S	L	RINSE OF SCAPESUITS & EMERGNCY	15	H	TI	3A
17	FO	DIESEL FUEL	L	POWERING OF COOLING TRAILER	3	I	F	6B
17	FO	DIESEL FUEL & OIL	L	TOWING OF ORBITER BY TRACTOR	3	I	F	6B
17	FS	CONTAMINATED DILUTION WATER MMH	L	EMERGENCY DILUTION OF LEAKS	2	CH	TI	1A,3A,4A
17	OS	CONTAMINATED DILUTION WATER N2O4	L	EMERGENCY DILUTION OF LEAKS	10	H	T	3A,6A
18	HF	HYDRAULIC FLUIDS	L	REPLACEMENT OF HYDRAULIC FLUID	3	IT	TIF	6B
19	AW	TPS ADHESIVE, RTV 566/577 PHENYL METHYL POLYSILOXANE TIN OXIDE IRON OXIDE SILICON HARDENER	S	TILE REPAIR	14	I	F	6B
19	AW	EA 911 EPOXY EPOXY ZINC CHROMATE ASBESTOS MERCAPTAN DIMETHYLAMINE	L	TILE BONDING TO ORBITER	5	T	IT	6B
19	AW	EA 934 EPOXY EPOXY RESIN ASBESTOS	L	TILE BONDING TO ORBITER	5	T	T	6B
19	AW	EA 9309 EPOXY EPOXY RESIN GLASS FIBERS ACRYLONITRILE/BUTADIEN/STYRENE ASBESTOS POLYGLYCOL DIAMINE SILANE	L	TILE BONDING TO ORBITER	5	T	T	6B
19	CN	SPRAYCANS OF TPS SEALER FLUORINATED SOLVENT FREON 113	S	REWATERPROOFING OF ORBITER	14	R	P	1B
19	CN	KOROPON PRIMER CONTAM CANS BUTYL ACETATE METHYL ETHYL KETONE (CONT.)	S	ORBITER TPS CAVITY PREPARATION	14			6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 2

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA	/CAL.	CAL. COMP. CLASS
		TOLUENE TALC - Mg SILICATES EPOXY RESIN						
19	CN	LACQUER SPRAY CANS PIGMENT SOLIDS VEHICLE SOLIDS TOLUENE XYLENE HYDROCARBON PROPELLANT PETROLEUM DISTILLATES	S	TRACER PATTERN FABRICATION	14			6B
19	CN	ISP CONTAM CUPS & WOOD STICKS INSTANT SET POLYMER	S	TRACER PATTERN FABRICATION	14	I	F	6B
19	CN	MARSHALL STENCIL INK SPRAYCANS XYLENE NAPTHA OTHER MATERIALS	S	REFINISH ORBITER TILE SURFACES	14			6B
19	CN	LACQUER SPRAYCANS PIGMENT SOLIDS VEHICLE SOLIDS TOLUENE XYLENE HYDROCARBON PROPELLANT PETROLEUM DISTILLATES	S	REFINISH ORBITER TILE SURFACES	14			6B
19	CN	ENAMEL SPRAYCANS	S	REFINISH ORBITER TILE SURFACES	14			6B
19	CN	ZINC CHROMATE PRIMER CANS	S	REFINISH ORBITER TILE SURFACES	14			6B
19	CN	CONTAMINATED TARE CUPS EA 911 EPOXY EA 934 EPOXY EA 9309 EPOXY	S	TILE BONDING TO ORBITER	14			6B
19	CR	RAGS WITH SOLVENTS, GREASES	S	GENERAL CLEANING	13	I	F	6B
19	CR	SOLVENT-CONTAM CHEESECLOTH ISOPROPYL ALCOHOL METHYL ETHYL KETONE 1,1,1-TRICHLOROETHANE	S	ORBITER TPS CAVITY PREPARATION	13	IT	FT	6B
19	CR	MEK & IPA CONTAM CHEESECLOTH METHYL ETHYL KETONE ISOPROPYL ALCOHOL	S	CHUCK FABRICATION FOR ORB TILE	13	IT	TF	6B
19	CR	IPA CONTAMINATED CHEESECLOTH ISOPROPYL ALCOHOL	S	DENSIFICATION OF ORBITER TILES	13	IT	FT	6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 3

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA /CAL.		CAL. COMP. CLASS
19	CR	TCE CONTAMINATED CHEESECLOTH 1,1,1-TRICHLOROETHANE	S	TILE REPAIR ON ORBITER	13	iT	TF	6B
19	CR	MEK CONTAMINATED CHEESECLOTH METHYL ETHYL KETONE	S	ORBITER TILE REPAIR	13	iT	TF	6B
19	CR	IPA CONTAMINATED CHEESECLOTH ISOPROPYL ALCOHOL	S	ORBITER TILE REPAIR	13	iT	TF	6B
19	CR	SOLID FILM LUBRIC CONT CHSCLTH	S	TRACER PATTERN FABRICATION	13	i	F	6B
19	CR	IPA CONTAMINATED CHEESECLOTH ISOPROPYL ALCOHOL	S	BOND TILE TO STRAIN ISOL PAD	13	iT	FT	6B
19	CR	DICHLOROMETHANE CONT CHSECLTH	S	PRESSURE PAD CLEANING	13	iT	FT	6B
19	CR	CONTAM CLOTHES, CLOTH & DEBRIS KOROPON BASE PRIMER KOROPON ACTIVATOR BERYLLIUM DUST	S	SANDING OF ET DOORS	14	T	TI	6B
19	EW	WASTEWATER FROM EEW&S	L	RINSE OF SCAPESUITS & EMERGNCY	15	H	T	3A,4A
19	FS	WASTEWATER FROM PAYLOAD/ORB MMH	L	RTN SPILLS-HOSE CONNECTIONS	2	CH	TI	1A,3A,4A
19	FS	WASTE FUEL AND PRIMOL 355[2] HYDRAZINE MMH	L	FUEL SPILL WASHDOWN SUMP	2	CH	TI	3A
19	HF	VACUUM PUMP OIL TEXACO REGAL OIL 068	L	DENSIFICATION OF ORBITER TILES	3	i	F	6B
19	HS	FUEL SCRUBBER HYDRAZINE MMH	L	REMOVAL OF FUEL VAPORS	11	CH	TI	1A,3A,4A
19	HY	HYDRAZINE	L	DRAIN PAYLOADS	2	RT	TIF	6B
19	HY	HYDRAZINE	L	DRAIN 3 APU's	2	RT	TIF	6B
19	IN	POLYURETHANE FOAM	S	TILE REPAIR	13	i	F	6B
19	IN	ALUMACAST A/B MIXTURE POLYOXPROPLENE PENTAERYTHRITOL AROMATIC WHITE OIL INERT ALUMINIZED PARTICLES DIPHENYLMETHANE DIISOCYANATE POLYMERS OF DPM DIISOCYANATE	L	CHUCK FABRICATION FOR ORB TILE	13			

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 4

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA	/CAL.	CAL. COMP. CLASS
19	IN	INSTANT SET POLYMER SCRAPS DIPHENYL METHANE DIISOCYANATE POLY(OXALKYLENE)POLYETHER AROMATIC HYDROCARBONS	S	TRACER PATTERN FABRICATION	13	i	F	6B
19	IN	SILANE/ACETIC ACID RESIDUE METHYL TRIMETHOXYSILANE ACETIC ACID	S	INITIAL WATERPROOFING OF TILE	13	CT	CT	1A
19	MH	MONOMETHYL HYDRAZINE	L	DRAIN-PURGE APS MANIFOLD & LNS	2	H	TF	6B
19	MH	MONOMETHYL HYDRAZINE	L	DRAIN-PURGE FRCS MANIFLD & LNS	2	H	TF	6B
19	MH	MONOMETHYL HYDRAZINE	L	DRAIN LAPS FUEL	2	H	TF	6B
19	MH	MONOMETHYL HYDRAZINE	L	DRAIN RAPS FUEL	2	H	TF	6B
19	MH	MONOMETHYL HYDRAZINE	L	DRAIN FRCS FUEL	2	H	TF	6B
19	MH	MONOMETHYL HYDRAZINE	L	DRAIN PBK FUEL	2	H	TF	6B
19	NH	WASTEWATER WITH AMMONIA	L	AMMONIA BOILER SERVICING	10	C	TCI	1A
19	NO	NITROGEN TETROXIDE	L	DRAIN-PURGE PBK MANIFOLDS	10	H	TF	6A
19	NO	NITROGEN TETROXIDE	L	DRAIN-PURGE APS, FRCS MANIFOLD	10	H	TF	6A
19	NO	NITROGEN TETROXIDE	L	DRAIN LAPS OXIDIZER	10	H	TF	6A
19	NO	NITROGEN TETROXIDE	L	DRAIN RAPS OXIDIZER	10	H	TF	6A
19	NO	NITROGEN TETROXIDE	L	DRAIN FRCS OXIDIZER	10	H	TF	6A
19	NO	NITROGEN TETROXIDE	L	DRAIN PBK OXIDIZER	10	H	TF	6A
19	NO	NITROGEN TETROXIDE	L	DRAIN PAYLOADS OXIDIZER	10	H	TF	6A
19	OS	DECONTAMINATE FROM PAYLOAD/ORB N2O4	L	RTN SPILLS-HOSE CONNECTIONS	10	H	TF	3A,6A
19	OS	WASTE OXIDIZER AND PRIMOL 355(2) N2O4	L	OXIDIZER SPILL WASHDOWN SUMP	10	H	T	3A
19	PA	KOROPON PRMER CONT PNT BRUSHES BUTYL ACETATE TALC - Mg SILICATES EPOXY RESIN	S	ORBITER TPS CAVITY PREPARATION	13	i	F	6B
19	PA	LACQUER #626486	L	ORBITER TILE REPAIR	5	i	F	6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 5

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ. PROP. EPA /CAL.		CAL. COMP. CLASS
19	PA	CONTAMINATED BRUSHES ORGANIC ZINC PRIMER ZINC CHROMATE PRIMER	S	REFINISH ORBITER TILE SURFACES	14	TE	T	6B
19	PA	ORGANIC ZINC PRIMER ZINC DUST BARYTES MOLYBDATE ORANGE SILICA HIGH MOLECULAR WEIGHT EPOXY CELLOSOLVE ACETATE TOLUENE METHYL ETHYL KETONE	L	REFINISH ORBITER TILE SURFACES	5	iT	TF	6B
19	PA	CONTAMINATED PAINT BRUSHES EA 911 EPOXY EA 934 EPOXY EA 9309 EPOXY	S	TILE BONDING TO ORBITER	13	iT	TFI	6B
19	SO	DOPE & LACQUER THINNER ALIPHATIC NAPTHA ESTER OR KETONE ISO- OR n-BUTYL ACETATE ISO- OR n-BUTYL ALCOHOL	L	ORBITER TILE REPAIR	5	iT	TF	4A
19	SW	WASHWATER WITH MEK METHYL ETHYL KETONE	L	SURFACE PREP FOR TILE REPAIR	15	iT	TF	3A
21	EW	WASTEWATER FROM EEW&S	L	RINSE OF SCAPESUITS & EMERGNCY	15	H	T	3A,4A
21	FS	WASTEWATER WITH MMH MMH	L	ROUTINE SPILLS CLEANUP	2	CH	TI	1A,3A,4A
21	HS	FUEL SCRUBBER MMH	L	REMOVAL OF FUEL VAPORS	11	CH	TI	1A,3A,4A
21	IN	TILE REPAIR FOAM POLYURETHANE	S	TILE REPAIR	13	i	F	6B
21	MH	MONOMETHYL HYDRAZINE	L	AQUISITION SCREEN TEST	2	H	TF	6B
21	NO	NITROGEN TETROXIDE	L	AQUISITION SCREEN TEST	10	H	TF	6A
21	NO	NITROGEN TETROXIDE	L	PBK LOAD/OFF LOAD	10	H	TF	6A
21	NO	NITROGEN TETROXIDE	L	RSV/TANK BLOWDOWN	10	H	TF	6A
21	NO	NITROGEN TETROXIDE	L	PBK LOAD/OFFLOAD SPILL	10	H	TF	6A
21	OS	WASTEWATER WITH OXIDIZER (CONT.)	L	DECONTAMINATE MIXTURES RTN SPL	10	H	TF	3A,6A

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 6

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA	/CAL.	CAL. COMP. CLASS
		N2O4						
21	SW	WASTEWATER WITH MEK METHYL ETHYL KETONE	L	TILE REPAIR	15	iT	TF	3A
21	WP	WASTE SEALS, FILTERS, ETC.	S	EQUIPMENT MAINTENANCE	14	i	F	6B
23	EW	WASTEWATER FROM EEV&S	L	RINSE OF SCAPESUITS & EMERGNCY	15	CH	TI	3A,4A
23	FS	HYDRAZINE-CONTAM. WASTEWATER HYDRAZINE	L	WASHDOWN OF EXPECTED N2H4 SPL	2	RT	TIF	6B
23	FS	HYDRAZINE-CONTAM. CLNUP WATER HYDRAZINE	L	FINAL CLEANUP OF LAUNCH MOUNT	2	RT	TIF	6B
23	FS	WASTEWATER FROM PPR HYDRAZINE	L	WASHDOWN OF PPR SPILLS	2	RT	TIF	6B
23	FS	PRIMOL 355[2] HYDRAZINE MMH	L	COVERS OXID. & FUEL SPILLS	2	CH	TI	3A
23	HF	HYDRAULIC FLUIDS TETRAORTHOCRESOL PHOSPHATE	L	MAINT. OF HYDRAULIC DEVICES	3	Ti	TIF	6B
23	HS	HYDRAZINE & MMH SCRUBBER HYDRAZINE MMH	L	RECOVERY OF HYDRAZINE VAPOR	11	CH	TI	1A,2A,4A
23	HY	HYDRAZINE	L	FILL SRB TVC APUs & ORB TANK	2	RT	TIF	6B
23	HY	LBM PROPELLANT PARAHYDRAZINE UNSYM DIMETHYLHYDRAZINE	L	CONTINGENCY FUEL OFFLOAD AT LP	2	RT	TIF	6B
23	HY	HYDRAZINE	L	CONTINGENCY FUEL OFFLOAD AT LP	2	RT	TIF	6B
23	IN	K5NA INSULATION BUTYL GLYCIDYL ETHER EPOXY RESINS, UNCURED	S	CLOSEOUT OF SRBs	13	iT	TF	6B
23	MH	MONOMETHYL HYDRAZINE	L	FUELING OF ORBITER	2	H	TF	6B
23	MH	MONOMETHYL HYDRAZINE	L	CONTINGENCY FUEL OFFLOAD AT LP	2	H	TF	6B
23	NH	AMMONIA	L	CONTINGENCY OFFLOAD AT LP	10	C	TCI	1A
23	NO	NITROGEN TETROXIDE	L	LOADING OF ORBITER OXIDIZER	10	H	TF	6A
23	NO	LBM OXIDIZER (CONT.)	L	CONTINGENCY OFFLOAD AT LP	10	H	TF	6A

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 7

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA /CAL.		CAL. COMP. CLASS
		NITROGEN TETROXIDE						
23	NO	NITROGEN TETROXIDE	L	CONTINGENCY OFFLOAD AT LP	10	H	TF	6A
23	OS	N2O4 CONTAM. CLEANUP WATER NITROGEN TETROXIDE	L	FINAL CLEANUP OF LAUNCH MOUNT	10	H	TF	3A,6A
23	OS	N2O4 CONTAM. WASTEWATER NITROGEN TETROXIDE	L	WASHDOWN OF EXPECTED N2O4 SPL	10	H	TF	3A,6A
23	OS	PRIMOL 355(2) N2O4	L	N2O4 SPILL CLEANUP	10	H	T	3A
23	PS	SRB PROPELLANT SPILL AMMONIUM PERCHLORATE ALUMINUM POWDER PBAN BINDER HTPB BINDER IRON OXIDE	S	ACCIDENT INVOLVING 1 SRB	13	iTR	TPF	2A,6A
23	QW	DELUGE WATER ALUMINUM OXIDE AMMONIA HYDROCHLORIC ACID ORGANIC CARBON	L	ACOUSTIC DAMPING/COOLING OF LP	10	C	C	3A
23	SO	SOLVENT MIXTURE FREON TMC/MF/TF SYM. TETRACHLOROETHANE	L	CLEANUP OF PCR & PPR	5	Ti	TIF	4A
23	SO	CONTAMINATED SOLVENTS	L	CLEANUP PROT COATING SPRAY EQU	5	iT	TIF	6B
23	SW	SOLVENT WASTEWATER UNSPEC.	L	CLEANUP OF PCR & PPR	15	CT	TC	6B
23	SW	CONTAMINATED WASTEWATER SOLVENTS CHLORINATED RUBBER ZINC PRIMER	L	REFURBISHMENT OF LP PROT COAT	15	iT	TF	6B
31	AL	SURFACTANT NaOH SODIUM TRIPOLYPHOSPHATE	L	SMALL PIPE CLEANING	10	C	TI	1A
31	AW	EA 934 EPOXY ADHESIVE EPOXY RESIN ASBESTOS FILLERS POLYAMIDE DIETHYLENETRIAMINE	S	BUILDUP OF SRB FOR CORK APPL.	14	iT	TIF	6B
31	CA	CONTAMINATED AIR FILTERS	S	FILTERING OF SPRAY BOOTH AIR	13	iT	TF	6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 8

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA /CAL.		CAL. COMP. CLASS
31	CA	CHARCOAL FILTER WASTES	S	FILTERING OF CURE ROOM AIR	13	Ti	TF	6B
31	CA	CONTAMINATED AIR FILTERS	S	FILTERS ON ALL EXHAUST STACKS	13	i	F	6B
31	CN	BOSTIK PRIMER PAINT CANS	S	SRB PAINTING	14			6B
31	CN	BOSTIK TOPCOAT PAINT CANS	S	SRB PAINTING	14			6B
31	CN	RUSTOLEUM PRIMER PAINT CANS	S	SRB FWD SKT RINGS PAINTING	14			6B
31	CN	RUSTOLEUM TOPCOAT PAINT CANS	S	SRB FWD SKT RINGS PAINTING	14			6B
31	CN	MSA-1 EMPTY CONTAINERS	S	SRB INSULATION	14			6B
31	CN	K5NA CONTAINERS	S	K5NA CLOSEOUTS	14			6B
31	CN	K5NA & MTA-2 PACKING MATERIALS	S	CONTAINERS OF INSUL FOR SRBs	13	Ti	IT	6B
31	CR	SOLVENT CONTAMINATED RAGS	S	CLEANING SRB WITH SOLVENTS	13	i	F	6B
31	CR	ALODINE CONTAMINATED RAGS	S	APPLICATION OF ALODINE TO SRB	13	E	T	6B
31	CR	RYMPLE CLOTHS	S	DEGREASING	13	Ti	TF	6B
31	CR	PAINT DROP CLOTHS	S	PROT OF FLOOR DURING PAINTING	13	Ti	IT	6B
31	EW	WASTEWATER FROM EEW&S	L	RINSE OF SCAPESUITS & EMERGNCY	15	T	T	3A
31	FO	FUEL AND OIL SPILLS	L	RAIL TRANSPORT OF SRB	3	i	F	6B
31	FO	FUEL & OIL WASTES	L	WASTES FROM IN-BUILDING OPS.	3	i	F	6B
31	FS	PRIMOL 355[2]	L	HYDRAZINE SPILL CLEAN-UP	2	CR	TI	6B
31	HS	SCRUBBER EFFLUENT	L	TVC HOT FIRE AREA SCRUBBER	11	TC	TI	1A,3A
31	HY	HYDRAZINE	L	SERVICING OF TVC APU	2	RT	TIF	6B
31	IN	MSA-1 (CURED)[3] EPICHLORHYDRIN/BGE GLASS ECOSPHERES PHENOLIC MICROSPHERES GLASS FIBERS BENTONE 27 METHYLENE DIANILINE m-PHENYLENE DIAMINE	S	SRB INSULATION	13	iT	TF	6B
31	IN	MSA-1, PART A (UNMIXED)[4] METHYLENE CHLORIDE (CONT.)	L	SRB INSULATION	5	Ti	TF	6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 9

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ. EPA	PROP. /CAL.	CAL. COMP. CLASS
		EPICHLORHYDRIN/BGE						
31	IN	MSA-1, PART B (UNMIXED)[4] METHYLENE CHLORIDE PERCHLOROETHYLENE METHYLENE DIANILINE m-PHENYLENE DIAMINE ETHYL ALCOHOL PHENOLIC MICROSPHERES GLASS ECOSPHERES GLASS FIBERS BENTONE 27	L	SRB INSULATION	5	Ti	TF	6B
31	IN	MTA-2 (CURED)[3] EPICHLORHYDRIN/BGE LP-3, POLYSULFIDE LIQ POLYMER MDA & mPDA STANNOUS OCTOATE PHENOLIC MICROSPHERES	S	SRB INSULATION	13	iT	TF	6B
31	IN	MTA-2 (UNMIXED)[4] EPICHLORHYDRIN/BGE LP-3, POLYSULFIDE LIQ POLYMER MDA & mPDA STANNOUS OCTOATE PHENOLIC MICROSPHERES METHYLENE CHLORIDE PERCHLOROETHYLENE	L	SRB INSULATION	5	iT	TF	6B
31	IN	K5NA BUTYL GLYCIDYL ETHER EPOXY RESINS	S	CLOSEOUT OF SRB AFT SKT & SRM	13	iT	TIF	6B
31	IN	INSULATION AND PAPER	S	PROT OF FLOOR DURING INSUL	13	iT	TF	6B
31	PA	BOSTIK EPOXY PRIMER EPOXY RESIN AMINE CURING AGENT TITANIUM DIOXIDE CHROMATE PIGMENTS INERT PIGMENTS SUSPENSION & FLOW CONTROL ADDI SOLVENTS	L	SRB PAINTING	5	iT	TIF	6B
31	PA	BOSTIK EPOXY TOPCOAT EPICHLORHYDRIN/BISPHENOL A AMINE CURING AGENT COLOR PIGMENT SUSPENSION & FLOW CONTROL ADDI SOLVENTS PHOTOCHEM REACTIVE (CONT.)	L	SRB PAINTING	5	iT	TIF	6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 10

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA	/CAL.	CAL. COMP. CLASS
		SOLVENTS NONPHOTOCHEM REACTIVE						
31	PA	RUSTOLEUM PRIMER SILICATES YELLOW IRON OXIDE TITANIUM DIOXIDE CALCIUM BOROSILICATE BENTONITE LINSEED PHENOLIC ALKYL RESIN ALIPHATIC HYDROCARBONS DRIERS AND ADDITIVES	L	SRB FWD SKIRT RINGS PAINTING	5	i	F	6B
31	PA	RUSTOLEUM TOPCOAT SILICATES TITANIUM DIOXIDE BENTONITE CLAY TINTING COLORS ALKYL RESIN ALIPHATIC HYDROCARBONS DRIERS & ADDOTIVES	L	SRB FWD SKIRT RINGS PAINTING	5	i	F	6B
31	PA	GACOFLEX TITANIUM DIOXIDE CLAY HYPALON HYDROCARBON RESIN PERCHLOROETHYLENE 1,1,1-TRICHLOROETHANE EPOXIDIZED SOYBEAN OIL	L	SRB PAINTING	5	T	TFI	6B
31	PA	PAINT-SPILL ABSORBANT	L	CLEAN-UP OF PAINT SPILLS	5	T	T	6B
31	PW	ALODINE CONTAMINATED WASTEWATR CHROMIC ACID FERRICYANIDE SALT COMPLEX FLUORIDE SALT	L	RINSE OF CONTAMINATED RAGS	8	EH	TCS	1B,3A,6A
31	SO	PERCHLOROETHYLENE	L	SURFACE CLEANING FOR K5NA	5	T	TI	6B
31	SO	TRICHLOROETHANE	L	SURFACE CLEANING FOR K5NA	5	T	TI	6B
31	SO	FREON 113	L	SURFACE CLEANING FOR K5NA	1	T	T	6B
31	SO	MSA-1 CONTAMINATED MECl	L	MSA-1 EQUIPMENT CLEANUP	5	T	T	4A
31	SO	MSA-1 CONTAM PERCHLOROETHYLENE	L	MSA-1 EQUIPMENT CLEANUP	5	T	T	4A
31	SO	PERCHLOROETHYLENE	L	PARTS CLEANING ROOM OPERATIONS	5	T	T	4A
31	SO	TRICHLOROETHANE	L	PARTS CLEANING ROOM OPERATIONS	5	T	T	4A

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 11

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA	/CAL.	CAL. COMP. CLASS
31	SO	METHYLENE CHLORIDE	L	PARTS CLEANING ROOM OPERATIONS	5	T	T	4A
31	SO	MTA-2 CONTAMINATED SOLVENTS	L	MTA-2 MIXING TANK CLEANUP	5	Ti	TF	6B
31	SO	BOSTIK CONTAMINATED SOLVENTS	L	BOSTIK EQUIPMENT CLEANUP	5	iT	TF	6B
31	SO	RUSTOLEUM CONTAMINATED SOLVENT	L	RUSTOLEUM EQUIPMENT CLEANUP	5	iT	TF	6B
32	BA	LITHIUM STORAGE BATTERIES	S	SAFING OF SRB DESTRUCT ORD	14	C	TC	1B,3B,6B
32	BA	SILVER-ZINC STORAGE BATTERIES	S	SAFING OF SRB DESTRUCT ORD	14	E	TC	1A,6B
32	BA	POTASSIUM HYDROXIDE SOLUTION	L	DRAINAGE OF AG-ZN BATTERIES	8	C	TC	1A,3B
32	CB	HYDRAZINE-CONTAMINATED WATER	L	FLUSHING OF AFT SKT CAT BED	2	C	TI	3A
32	CS	CONTAMINATED SEAWATER(5)	L	PARTIAL ONDECK PUMP OUT OF SRB	9			3A
32	CS	CONTAMINATED SEAWATER(5)	L	DRAINAGE OF SRB INTERIOR	9			3A
32	CW	SRB FWD SKT CLEANING WASTES	L	CLEANING OF FWD SKT TP CAVITY	26(6)			
32	EW	WASTEWATER FROM EEW&S	L	RINSE OF SCAPESUITS & EMERGNCY	15	CH	TI	3A,4A
32	FO	BILGE WASTES	L	BOAT RETRIEVAL OF SPENT SRBs	4	i	TF	6B
32	FO	DIESEL FUEL & OIL SPILLS	L	TRANSPORT BY TRACTOR OF SRBs	3	i	F	6B
32	FS	WASTE FUEL & PRIMOL 355(2) HYDRAZINE	L	FUEL SPILL WASHDOWN SUMP	2	C	CTI	3A
32	HS	HYDRAZINE SCRUBBER EFFLUENT HYDRAZINE	L	DRAINAGE OF TVC APUs ON SRBs	11	C	TI	3A
32	HY	HYDRAZINE	L	DRAINAGE OF TVC APUs ON SRBs	2	RT	TIF	6B
32	IN	INSULATION WASTES, SOLID MSA-1 INSULATION MTA-2 INSULATION K5NA INSULATION PR-855 INSULATION	S	STRIPPING OFF SRB INSULATION	13	i	F	6B
32	IN	INSULATION CONTAM FILTERS	S	FILTER HIGH PRES WATER SPRAY	13			6B
32	IW	INSULATION-CONTAMINATED WATER MSA-1 INSULATION MTA-2 INSULATION K5NA INSULATION PR-855 INSULATION	L	INSULATION STRIP W/WATER SPRAY	15			3A

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 12

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA	/CAL.	CAL. COMP. CLASS
32	PR	PRESERVATIVE CHEMICALS PROTECTIVE LUBRICANTS	L	PROTECTION OF SRB SEG JOINTS	3	C	C	1A
32	PS	SRB SOLID PROPELLANT AMMONIUM PERCHLORATE ALUMINUM POWDER FERRIC OXIDE POLYMER & EPOXY RESIN	S	ACCID. SPILL OF RESIDUAL FUEL	13	R	F	6B
32	SB	DETERGENT WASHWATER(7)	L	WASHING OF SRB COMPONENTS	9			3A
32	SB	POTABLE RINSE WATER(5)	L	RINSING OF SRB COMPONENTS	9			3A
32	SB	DEIONIZED RINSE WATER(5)	L	FINAL RINSE OF SRB COMPONENTS	9			3A
32	SI	SRB RINSE WATER(5)	L	ONDECK RINSE OF SRB EXTERIOR	9			3A
32	SO	SOLVENTS FREON TMC/TM SOLVENTS, UNSPECIFIED	L	PREPARATION OF SRB SEG JOINTS	5	i	IF	6B 6B
33	CA	AIR FILTERS	S	FILTERING PARTICULATES	13	i	F	6B
33	EW	WASTEWATER FROM EEW&S	L	EMERGENCY WASHWATER	15	T	T	6B
33	HF	HYDRAULIC FLUIDS	L	CHANGING HYDRAULIC FLUID	3	Ti	TIF	6B
99	AW	GX-6300 ABLATOR ADHESIVE RESIN STM L 663 RESIN STM L 664 SILICA POWDER CARBON POWDER CURING AGENT L 663 CURING AGENT L 664 HEPTANE XYLENE	S	PREP FOR ABLATOR CLOSEOUTS	14	iT	TF	6B
99	AW	ISOCHEM POLYESTER RESIN ADHESV STYRENE MEK PEROXIDE CATALYST DIMETHYL PHTHALATE	S	PREP FOR SPRAY-ON FOAM CLOSE	13	iTR	TFPI	6B
99	CA	FILTER	S	FILTER PARTICULATE IN CLN AREA	13	i	F	6B
99	CN	SOLVENT CONTAMINATED CONTAINER SOLVENTS(8)	S	SURFACE PREP FOR ET CLOSEOUT	14			6B
99	CN	PRIMER CONTAMINATED CONTAINERS	S	PRIMING FOR ET CLOSEOUTS	14			6B
99	CN	ADHESIVE CONTAMINATED CONTAINR	S	PREPARATION FOR ET CLOSEOUTS	14			6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 13

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA /CAL.		CAL. COMP. CLASS
99	CN	SOLVENT CONTAINERS	S	EQUIPMENT CLEANUP	14			
99	CN	POUR FOAM CONTAINERS	S	CONTAINERS FOR POLYOL & MDI	14			6B
99	CN	ABLATOR CONTAMINATED CONTAINER	S	ET HARD-PACKED ABLATOR CLOSE	14			6B
99	CR	SOLVENT CONTAMINATED RAGS[8]	S	SURFACE PREP FOR ET CLOSEOUT	13	iT	TF	6B
99	CR	ADHESIVE CONTAMINATED RAGS	S	PREPARATION FOR ET CLOSEOUTS	13	iTR	TFPI	6B
99	CR	EPOXY PRIMER-CONTAMINATED RAGS	S	APPL OF EPOXY PRIMER TO ET	13	iTE	FTI	6B
99	IN	BX-250 FOAM (SOFI) DIPHENYL METHANE DIISOCYANATE FREON 11 AMINES POLYOLS SUPER MEK PEROXIDE POLYESTER RESIN DIMETHYL PHTHALATE	S	ET SPRAY-ON FOAM CLOSEOUTS	13	TiR	TFPI	6A
99	IN	POUR FOAM (MIXED)[3] POLYURETHANE	S	ET POUR FOAM CLOSEOUT	13	i	F	6B
99	IN	POUR FOAM PART A (UNMIXED)[4] DIPHENYL METHANE DIISOCYANATE FREON 11 POLYOLS, AMINES	L	ET POUR FOAM CLOSEOUTS	5	i	F	6B
99	IN	POUR FOAM PART B (UNMIXED)[4] FREON 11 AMINE CATALYST POLYETHER POLYOL BLEND	L	ET POUR FOAM CLOSEOUTS	5	i	F	6B
99	IN	POUR FOAM CONTAMINATED PAPER	S	ET POUR FOAM CLOSEOUTS	13	i	F	6B
99	IN	SUPER LIGHT ABLATOR (I) RESIN L664, PT A SILICA FIBERS CORK PHENOLIC MICROSPHERES SILICA MICROSPHERES CURING AGENT	S	ET HAND-PACKED ABLATOR CLOSE	13	iT	FT	6B
99	IN	SUPER LIGHT ABLATOR (II) RESIN STM L664, PT A CARBON POWDER SILICA FIBERS CORK (CONT.)	S	HAND-PACKED ABLATOR CLOSEOUT	13	iT	TF	6B

TABLE A-1. TREATABILITY CHARACTERISTICS OF WASTES GENERATED FOR THE SPACE SHUTTLE PROGRAM AT VAFB. PAGE 14

STA SET	CAT	WASTE MATERIAL	SOL OR LIQ	OPERATION	TREATMENT CATEGORY	HAZ.PROP. EPA /CAL.		CAL. COMP. CLASS
		SILICA MICROSPHERES PHENOLIC MICROSPHERES CURING AGENT STM L664, PT B						
99	IN	POUR FOAM "TRIMMINGS" POLYURETHANE	S	FOAM TRIM BEFORE ADHES APPL	13	1	F	6B
99	PA	EPOXY PRIMER METHYLENE ISOBUTYL KETONE XYLENE CYCLOHEXANONE CHROMATES INORGANIC PIGMENTS N-BUTANOL TOLUENE AMINO SILANE METHYL ETHYL KETONE	L	PRIMER FOR FOAM INSUL ET CLOSE	5	1TE	TIF	6B
99	PA	D.C. 1200 VM AND P NAPTHA ORGANOMETALLIC SALTS	L	PRIMER FOR ABLATOR ET CLOSEOUT	5	1T	TF	6B
99	SO	FREON TMC	L	SURFACE PROP FOR ET CLOSEOUT	1	T	T	6B
99	SO	1,1,1-TRICHLOROETHANE	L	SURFACE PREP FOR ET CLOSEOUT	5	T1	TF	6B
99	SO	MEK & CELLOSOLVE	L	SUBSTRATE PREP EQUIP CLEANUP	5	1T	FT	6B
99	SO	HEPTANE	L	ABLATOR EQUIPMENT CLEANUP	3	1T	TF	6B
99	SO	CELLOSOLVE ACETATE	L	FOAM ADHES & PRIMER EQUIP CLNP	5	1T	TF	6B
99	SO	METHYL ETHYL KETONE	L	FOAM ADHES & PRIMER EQUIP CLNP	5	1T	TF	6B
99	SR	SOLVENT REDUCER METHYL ETHYL KETONE CYCLOHEXANONE	L	SURFACE PREP FOR ET CLOSEOUT	5	1T	FT	6B
99	SW	SOLVENT CONTAMINATED WATER	L	RINSING OF CONTAMINATED RAGS	15	T	T	3A,6B

1. Station Set Zero is used for wastes which are generated from space shuttle operations at a place other than a designated station set.

2. Primol 355 is a high-viscosity mineral oil. Its use requires a design decision and Air Force approval. This or another oil or a foam will be used to prevent vaporization of hypergols.

3. Insulation is mixed, but not used.

4. Insulation is unmixed, but is disposed of because shelf life was exceeded.

5. Nature of contaminants is not known.

6. Treatment Category 26 is used for those wastes whose nature is unknown.

7. Contains unidentified surfactants and/or detergents.

8. Contains Freon TMC, trichloroethane, methyl ethyl ketone, and cellosolve.

TABLE A-2. BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS[1]	BASELINE VOLUME PER LAUNCH GAL OR CF
1	0[2]	SO	CONTAMINATED FREON	L	2376.8	5240.0	1514.0	400.0[3]
1	31	SO	FREON 113	L	.6	1.3	.4	.1
1	99	SO	FREON TMC	L	.1	.3	<.1	<.1
TOTALS FOR TREATMENT CATEGORY 1								
			NORTH VANDENBERG (SS 17,18,19,21)		.0	.0	.0	.0
			SOUTH VANDENBERG (SS 23,31,33,99)		.7	1.6	.4	.1
			PORT HUENEME (SS 32)		.0	.0	.0	.0
			TOTAL		2377.5	5241.6	1514.4	400.1
2	17	FS	CONTAMINATED DILUTION WATER	L	.0	.0	.0	.0
			MMH		.0	.0	.0	.0
2	19	FS	WASTEWATER FROM PAYLOAD/ORB	L	544.3	1200.0	567.8	150.0
			MMH		54.4	120.0	56.8	15.0
2	19	FS	WASTE FUEL AND PRIMOL 355[4]	L	36.3	80.0	37.8	10.0
			HYDRAZINE & MMH		1.8	4.0	1.9	.5
2	19	HY	HYDRAZINE	L	.0	.0	.0	.0
2	19	HY	HYDRAZINE	L	68.0	150.0	68.1	18.0
2	19	MH	MONOMETHYL HYDRAZINE	L	35.4	78.0	40.5	10.7
2	19	MH	MONOMETHYL HYDRAZINE	L	9.1	20.0	10.2	2.7
2	19	MH	MONOMETHYL HYDRAZINE	L	18.8[5]	41.4[5]	21.6[5]	5.7[5]
2	19	MH	MONOMETHYL HYDRAZINE	L	18.8[5]	41.4[5]	21.6[5]	5.7[5]
2	19	MH	MONOMETHYL HYDRAZINE	L	13.3[5]	29.4[5]	15.1[5]	4.0[5]
2	19	MH	MONOMETHYL HYDRAZINE	L	41.6[5]	91.8[5]	47.7[5]	12.6[5]
2	21	FS	WASTEWATER WITH MMH	L	108.0	238.0	113.6	30.0
			MMH		10.0	22.0	11.4	3.0
2	21	MH	MONOMETHYL HYDRAZINE	L	.0	.0	.0	.0
2	23	FS	HYDRAZINE-CONTAM. WASTEWATER	L	567.9	1252.0	567.8	150.0
			HYDRAZINE		33.6	74.0	30.3	8.0
2	23	FS	HYDRAZINE-CONTAM. CLNUP WATER (CONT.)	L	189.1	417.0	189.3	50.0

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 2

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
			HYDRAZINE		2.1	4.6	1.9	.5
2	23	FS	WASTEWATER FROM PPR HYDRAZINE	L	2271.1	5007.0	2271.0	600.0
2	23	FS	PRIMOL 355(4) HYDRAZINE MMH	L	340.6	751.0	378.5	100.0
2	23	HY	HYDRAZINE	L	208.2	459.0	189.3	50.0
2	23	HY	LBM PROPELLANT PARAHYDRAZINE UNSYM DIMETHYLHYDRAZINE	L	.0 .0 .0	.0 .0 .0	.0 .0 .0	.0 .0 .0
2	23	HY	HYDRAZINE	L	.0	.0	.0	.0
2	23	MH	MONOMETHYL HYDRAZINE	L	330.7	729.0	378.5	100.0
2	23	MH	MONOMETHYL HYDRAZINE	L	.0	.0	.0	.0
2	31	FS	PRIMOL 355(4)	L	.0	.0	.0	.0
2	31	HY	HYDRAZINE	L	109.5	241.3	109.0	28.8
2	32	CB	HYDRAZINE-CONTAMINATED WATER	L	108.9	240.0	113.6	30.0
2	32	FS	WASTE FUEL & PRIMOL 355(4) HYDRAZINE	L	.0 .0	.0 .0	.0 .0	.0 .0
2	32	HY	HYDRAZINE	L	41.0	90.5	40.9	10.8
TOTALS FOR TREATMENT CATEGORY 2								
NORTH VANDENBERG (SS 17,18,19,21)					893.6	1970.0	944.0	249.4
SOUTH VANDENBERG (SS 23,31,33,99)					4017.1	8856.3	4083.3	1078.8
PORT HUENEME (SS 32)					149.9	330.5	154.4	40.8
TOTAL					5060.6	11156.8	5181.7	1369.0
3	17	FO	DIESEL FUEL	L				
3	17	FQ	DIESEL FUEL & OIL	L				
3	18	HF	HYDRAULIC FLUIDS	L	4.3	9.5	9.5	2.5
3	19	HF	VACUUM PUMP OIL TEXACO REGAL OIL 068	L	4.5	10.0	4.5	1.2
3	23	HF	HYDRAULIC FLUIDS (CONT.)	L	393.7	868.0	378.5	100.0

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 3

TRT SET	STA CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
		TETRAORTHOCRESOL PHOSPHATE		393.7	868.0	378.5	100.0
3	31 FO	FUEL AND OIL SPILLS	L	.0	.0	.0	.0
3	31 FO	FUEL & OIL WASTES	L	38.1	84.0	37.8	10.0
3	32 FO	DIESEL FUEL & OIL SPILLS	L	.0	.0	.0	.0
3	32 PR	PRESERVATIVE CHEMICALS PROTECTIVE LUBRICANTS	L				
3	33 HF	HYDRAULIC FLUIDS	L				
3	99 SO	HEPTANE	L	75.1	165.5	113.2	29.9
TOTALS FOR TREATMENT CATEGORY 3							
NORTH VANDENBERG (SS 17,18,19,21)				8.8	19.5	14.0	3.7
SOUTH VANDENBERG (SS 23,31,33,99)				506.9	1117.5	529.5	139.9
PORT HUENEME (SS 32)				.0	.0	.0	.0
TOTAL				515.7	1137.0	543.5	143.6
4	32 FO	BILGE WASTES	L				
TOTALS FOR TREATMENT CATEGORY 4							
NORTH VANDENBERG (SS 17,18,19,21)							
SOUTH VANDENBERG (SS 23,31,33,99)							
PORT HUENEME (SS 32)							
TOTAL							
5	19 AW	EA 911 EPOXY EPOXY ZINC CHROMATE ASBESTOS MERCAPTAN DIMETHYLAMINE	L				
5	19 AW	EA 934 EPOXY EPOXY RESIN ASBESTOS	L				
5	19 AW	EA 9309 EPOXY EPOXY RESIN GLASS FIBERS ACRYLONITRILE/BUTADIEN/STYRENE ASBESTOS POLYGLYCOL DIAMINE SILANE	L				

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 4

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS[1]	BASELINE VOLUME PER LAUNCH GAL OR CF
5	19	PA	LACQUER #626486	L	.6[6]	1.3[6]	.8	.2
5	19	PA	ORGANIC ZINC PRIMER	L	5.7[7]	12.5[7]	5.7	1.5
			ZINC DUST					
			BARYTES					
			MOLYBDATE ORANGE					
			SILICA					
			HIGH MOLECULAR WEIGHT EPOXY					
			CELLOSOLVE ACETATE					
			TOLUENE					
			METHYL ETHYL KETONE					
5	19	SO	DOPE & LACQUER THINNER	L	.8[7]	1.8[7]	.8	.2
			ALIPHATIC NAPTHA		.1	.3		
			ESTER OR KETONE		.4	.8		
			ISO- OR n-BUTYL ACETATE		.2	.5		
			ISO- OR n-BUTYL ALCOHOL		.1	.2		
5	23	SO	SOLVENT MIXTURE	L	291.5[8]	642.6[8]	208.2	55.0
			FREON TMC/MF/TF					
			SYM. TETRACHLOROETHANE					
5	23	SO	CONTAMINATED SOLVENTS	L	264.9[8]	584.0[8]	189.3	50.0
5	31	IN	MSA-1, PART A (UNMIXED)[9]	L				
			METHYLENE CHLORIDE					
			EPICHLORHYDRIN/BGE					
5	31	IN	MSA-1, PART B (UNMIXED)[9]	L				
			METHYLENE CHLORIDE					
			PERCHLOROETHYLENE					
			METHYLENE DIANILINE					
			m-PHENYLENE DIAMINE					
			ETHYL ALCOHOL					
			PHENOLIC MICROSPHERES					
			GLASS ECOSPHERES					
			GLASS FIBERS					
			BENTONE 27					
5	31	IN	MTA-2 (UNMIXED)[9]	L	13.6	30.0	151.4	40.0
			EPICHLORHYDRIN/BGE		4.2	9.3		
			LP-3, POLYSULFIDE LIQ POLYMER		4.2	9.3		
			MDA & mPDA		1.7	3.7		
			STANNOUS OCTOATE		.2	.4		
			PHENOLIC MICROSPHERES		3.4	7.4		
			METHYLENE CHLORIDE					
			PERCHLOROETHYLENE					
5	31	PA	BOSTIK EPOXY PRIMER	L	12.2	27.0	11.4	3.0
			(CONT.)					

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	GAL OR CF
			EPOXY RESIN		1.6	3.5		
			AMINE CURING AGENT		.3	.6		
			TITANIUM DIOXIDE		.3	.6		
			CHROMATE PIGMENTS		.5	1.2		
			INERT PIGMENTS		1.7	3.8		
			SUSPENSION & FLOW CONTROL ADDI		<.1	.1		
			SOLVENTS		7.3	16.2		
5	31	PA	BOSTIK EPOXY TOPCOAT	L	16.8	37.0	15.1	4.0
			EPICHLORHYDRIN/BISPHENOL A		4.1	9.0		
			AMINE CURING AGENT		.6	1.4		
			COLOR PIGMENT		3.4	7.5		
			SUSPENSION & FLOW CONTROL ADDI		.2	.5		
			SOLVENTS PHOTOCHEM REACTIVE		1.6	3.5		
			SOLVENTS NONPHOTOCHEM REACTIVE		6.8	15.0		
5	31	PA	RUSTOLEUM PRIMER	L	3.6	8.0	3.8	1.0
			SILICATES		.6	1.3		
			YELLOW IRON OXIDE		.3	.6		
			TITANIUM DIOXIDE		.1	.2		
			CALCIUM BOROSILICATE		.7	1.5		
			BENTONITE		<.1	<.1		
			LINSEED PHENOLIC ALKYL RESIN		.7	1.6		
			ALIPHATIC HYDROCARBONS		1.2	2.6		
			DRIERS AND ADDITIVES		.1	.2		
5	31	PA	RUSTOLEUM TOPCOAT	L	3.6	8.0	3.8	1.0
			SILICATES		1.2	2.6		
			TITANIUM DIOXIDE		.6	1.4		
			BENTONITE CLAY		<.1	<.1		
			TINTING COLORS		.1	.2		
			ALKYL RESIN		.6	1.4		
			ALIPHATIC HYDROCARBONS		1.1	2.4		
			DRIERS & ADDOTIVES		<.1	.1		
5	31	PA	GACOFLEX	L	17.7	39.0	11.4	3.0
			TITANIUM DIOXIDE		1.2	2.7		
			CLAY		1.4	3.1		
			HYPALON		1.8	3.9		
			HYDROCARBON RESIN		.4	.8		
			PERCHLOROETHYLENE		8.3	18.3		
			1,1,1-TRICHLOROETHANE		4.4	9.8		
			EPOXIDIZED SOYBEAN OIL		.2	.4		
5	31	PA	PAINT-SPILL ABSORBANT	L	.0	.0	.0	.0
5	31	SO	PERCHLOROETHYLENE	L	.6	1.4	.4	.1
5	31	SO	TRICHLOROETHANE	L	.5	1.1	.4	.1

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
5	31	SO	MSA-1 CONTAMINATED MECl	L	1505.5	3319.0	1135.5	300.0
5	31	SO	MSA-1 CONTAM PERCHLOROETHYLENE	L	1852.0	4083.0	1135.5	300.0
5	31	SO	PERCHLOROETHYLENE	L	277.6	612.0	170.3	45.0
5	31	SO	TRICHLOROETHANE	L	81.6	180.0	60.6	16.0
5	31	SO	METHYLENE CHLORIDE	L	255.8	564.0	193.0	51.0
5	31	SO	MTA-2 CONTAMINATED SOLVENTS	L	529.8	1168.0	378.5	100.0
5	31	SO	BOSTIK CONTAMINATED SOLVENTS	L	264.9	584.0	189.3	50.0
5	31	SO	RUSTOLEUM CONTAMINATED SOLVENT	L	264.9	584.0	189.3	50.0
5	32	SO	SOLVENTS	L	10.6(8)	23.4(8)	7.6	2.0
			FREON TMC/TM					
			SOLVENTS, UNSPECIFIED					
5	99	IN	POUR FOAM PART A (UNMIXED)(9)	L	6.4(9)	14.0(9)	18.9	5.0
			DIPHENYL METHANE DIISOCYANATE		3.2	7.0		
			FREON 11		2.0	4.5		
			POLYOLS, AMINES		1.1	2.5		
5	99	IN	POUR FOAM PART B (UNMIXED)(9)	L	6.4(9)	14.0(9)	18.9	5.0
			FREON 11		1.3	2.8		
			AMINE CATALYST		.1	.3		
			POLYETHER POLYOL BLEND		4.9	10.9		
5	99	PA	EPOXY PRIMER	L	<.1(10)	.1(10)		
			METHYLENE ISOBUTYL KETONE					
			XYLENE					
			CYCLOHEXANONE					
			CHROMATES					
			INORGANIC PIGMENTS					
			N-BUTANOL					
			TOLUENE					
			AMINO SILANE					
			METHYL ETHYL KETONE					
5	99	PA	D.C. 1200	L	<.1	.1		
			VM AND P NAPTHA					
			ORGANOMETALLIC SALTS					
5	99	SO	1,1,1-TRICHLOROETHANE	L	.1	.3	<.1	<.1
5	99	SO	MEK & CELLOSOLVE	L	12.2	26.9	15.1	4.0

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 7

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
5	99	SO	CELLOSOLVE ACETATE	L	107.0	236.0	113.2	29.9
5	99	SO	METHYL ETHYL KETONE	L	88.4	194.9	109.8	29.0
5	99	SR	SOLVENT REDUCER	L	.5(8)	1.2(8)	.4	.1
			METHYL ETHYL KETONE		.4	.8		
			CYCLOHEXANONE		.2	.4		
TOTALS FOR TREATMENT CATEGORY 5								
NORTH VANDENBERG (SS 17,18,19,21)					7.1	15.6	7.2	1.9
SOUTH VANDENBERG (SS 23,31,33,99)					5878.3	12959.6	4323.2	1142.2
PORT HUENEME (SS 32)					10.6	23.4	7.6	2.0
TOTAL					5896.0	12998.6	4338.0	1146.1
8	31	PW	ALODINE CONTAMINATED WASTEWATR	L	151.5(7)	334.0(7)	151.4	40.0
			CHRONIC ACID		2.7	5.9		
			FERRICYANIDE SALT		1.5	3.3		
			COMPLEX FLUORIDE SALT		<.1	.1		
8	32	BA	POTASSIUM HYDROXIDE SOLUTION	L	8.7	19.2	8.7	2.3
TOTALS FOR TREATMENT CATEGORY 8								
NORTH VANDENBERG (SS 17,18,19,21)					.0	.0	.0	.0
SOUTH VANDENBERG (SS 23,31,33,99)					151.5	334.0	151.4	40.0
PORT HUENEME (SS 32)					8.7	19.2	8.7	2.3
TOTAL					160.2	353.2	160.1	42.3
9	32	CS	CONTAMINATED SEAWATER(11)	L	.0	.0	.0	.0
9	32	CS	CONTAMINATED SEAWATER(11)	L	14514.9	32000.0	15140.0	4000.0
9	32	SB	DETERGENT WASHWATER(12)	L	34835.7	76800.0	36336.0	9600.0
9	32	SB	POTABLE RINSE WATER(11)	L	120473.5	265600.0	125662.0	33200.0
9	32	SB	DEIONIZED RINSE WATER(11)	L	56390.3	124320.0	58818.9	15540.0
9	32	SI	SRB RINSE WATER(11)	L	21772.3	48000.0	22710.0	6000.0
TOTALS FOR TREATMENT CATEGORY 9								
NORTH VANDENBERG (SS 17,18,19,21)					.0	.0	.0	.0
SOUTH VANDENBERG (SS 23,31,33,99)					.0	.0	.0	.0
PORT HUENEME (SS 32)					247986.7	546720.0	258666.9	68340.0
TOTAL					247986.7	546720.0	258666.9	68340.0
10	17	OS	CONTAMINATED DILUTION WATER (CONT.)	L	.0	.0	.0	.0

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 8

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS[1]	BASELINE VOLUME PER LAUNCH GAL OR CF
			N2O4		.0	.0	.0	.0
10	19	NH	WASTEWATER WITH AMMONIA	L	36.3[5]	80.0[5]	37.8[5]	10.0[5]
10	19	NO	NITROGEN TETROXIDE	L	5.4	12.0	3.8	1.0
10	19	NO	NITROGEN TETROXIDE	L	9.8	21.6	6.8	1.8
10	19	NO	NITROGEN TETROXIDE	L	34.3[5]	75.6[5]	24.2[5]	6.4[5]
10	19	NO	NITROGEN TETROXIDE	L	34.3[5]	75.6[5]	24.2[5]	6.4[5]
10	19	NO	NITROGEN TETROXIDE	L	23.9[5]	52.6[5]	16.7[5]	4.4[5]
10	19	NO	NITROGEN TETROXIDE	L	79.5[5]	175.2[5]	55.3[5]	14.6[5]
10	19	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	19	OS	DECONTAMINATE FROM PAYLOAD/ORB	L	290.3	640.0	302.8	80.0
			N2O4		2.7	6.0	1.9	.5
10	19	OS	WASTE OXIDIZER AND PRIMOL 355[4]	L	37.2	82.0	37.8	10.0
			N2O4		2.7	6.0	1.9	.5
10	21	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	21	NO	NITROGEN TETROXIDE	L	15.0	33.0	10.6	2.8
10	21	NO	NITROGEN TETROXIDE	L	51.3	113.0	35.6	9.4
10	21	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	21	OS	WASTEWATER WITH OXIDIZER	L	72.8	160.4	75.7	20.0
			N2O4		.5	1.2	.4	.1
10	23	NH	AMMONIA	L	.0	.0	.0	.0
10	23	NO	NITROGEN TETROXIDE	L	183.4	404.3	123.0	32.5
10	23	NO	LBM OXIDIZER	L	.0	.0	.0	.0
			NITROGEN TETROXIDE		.0	.0	.0	.0
10	23	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	23	OS	N2O4 CONTAM. CLEANUP WATER	L	113.4	250.0	113.6	30.0
			NITROGEN TETROXIDE		20.8	45.9	14.0	3.7
10	23	OS	N2O4 CONTAM. WASTEWATER	L	378.3	834.0	378.5	100.0
			NITROGEN TETROXIDE		28.1	62.0	18.9	5.0

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
10	23	OS	PRIMOL 355(4)	L	340.6	751.0	378.5	100.0
			N2O4					
10	23	QW	DELUGE WATER	L	567894.6	1252000.0	567750.0	150000.0
			ALUMINUM OXIDE		3.4	7.4		
			AMMONIA		.2	.5		
			HYDROCHLORIC ACID		362.4	799.0		
			ORGANIC CARBON		3.4	7.5		
10	31	AL	SURFACTANT	L				
			NaOH					
			SODIUM TRIPOLYPHOSPHATE					
TOTALS FOR TREATMENT CATEGORY 10								
NORTH VANDENBERG (SS 17,18,19,21)					689.9	1521.0	631.3	166.8
SOUTH VANDENBERG (SS 23,31,33,99)					568910.4	1254239.3	568743.6	150262.5
PORT HUENEME (SS 32)					.0	.0	.0	.0
TOTAL					569600.3	1255760.3	569375.0	150429.3
11	19	HS	FUEL SCRUBBER	L	2540.1	5600.0	2649.5	700.0
			HYDRAZINE & MMH		50.8	112.0	53.0	14.0
11	21	HS	FUEL SCRUBBER	L	362.9	800.0	378.5	100.0
			MMH		6.6(13)	14.6(13)	7.6(13)	2.0(13)
11	23	HS	HYDRAZINE & MMH SCRUBBER	L	757.0	1669.0	757.0	200.0
			HYDRAZINE		16.6(13)	37.0(13)	15.1(13)	4.0(13)
			MMH		13.2(13)	29.0(13)	15.1(13)	4.0(13)
11	31	HS	SCRUBBER EFFLUENT	L	37.6	83.0	37.8	10.0
11	32	HS	HYDRAZINE SCRUBBER EFFLUENT	L	181.4	400.0	189.3	50.0
			HYDRAZINE		1.6(13)	3.6(13)	1.5(13)	.4(13)
TOTALS FOR TREATMENT CATEGORY 11								
NORTH VANDENBERG (SS 17,18,19,21)					2903.0	6400.0	3028.0	800.0
SOUTH VANDENBERG (SS 23,31,33,99)					794.7	1752.0	794.8	210.0
PORT HUENEME (SS 32)					181.4	400.0	189.3	50.0
TOTAL					3879.1	8552.0	4012.1	1060.0
13	19	CR	RAGS WITH SOLVENTS, GREASES	S	4.5(14)	10.0(14)	56.6	2.0
13	19	CR	SOLVENT-CONTAM CHEESECLOTH	S				
			ISOPROPYL ALCOHOL					
			METHYL ETHYL KETONE					
			(CONT.)					

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	GAL OR CF
			1,1,1-TRICHLOROETHANE					
13	19	CR	MEK & IPA CONTAM CHEESECLOTH METHYL ETHYL KETONE ISOPROPYL ALCOHOL	S				
13	19	CR	IPA CONTAMINATED CHEESECLOTH ISOPROPYL ALCOHOL	S				
13	19	CR	TCE CONTAMINATED CHEESECLOTH 1,1,1-TRICHLOROETHANE	S				
13	19	CR	MEK CONTAMINATED CHEESECLOTH METHYL ETHYL KETONE	S				
13	19	CR	IPA CONTAMINATED CHEESECLOTH ISOPROPYL ALCOHOL	S				
13	19	CR	SOLID FILM LUBRIC CONT CHSCLTH	S				
13	19	CR	IPA CONTAMINATED CHEESECLOTH ISOPROPYL ALCOHOL	S				
13	19	CR	DICHLOROMETHANE CONT CHSECLTH	S				
13	19	IN	POLYURETHANE FOAM	S	4.5(15)	10.0(15)	416.2	14.7
13	19	IN	ALUMACAST A/B MIXTURE POLYOXPROPLENE PENTAERYTHRITOL AROMATIC WHITE OIL INERT ALUMINIZED PARTICLES DIPHENYLMETHANE DIISOCYANATE POLYMERS OF DPM DIISOCYANATE	L	.1	.3		
13	19	IN	INSTANT SET POLYMER SCRAPS DIPHENYL METHANE DIISOCYANATE POLY(OXALKYLENE)POLYETHER AROMATIC HYDROCARBONS	S	1.8(15)	4.0(15)	22.7	.8
13	19	IN	SILANE/ACETIC ACID RESIDUE METHYL TRIMETHOXYSILANE ACETIC ACID	S	.5	1.0	5.7(15)	.2(15)
13	19	PA	KOROPON PRMER CONT PNT BRUSHES BUTYL ACETATE TALC - Mg SILICATES EPOXY RESIN	S	18.1(16)	40.0(16)	141.6	5.0
13	19	PA	CONTAMINATED PAINT BRUSHES (CONT.)	S	1.8(16)	4.0(16)	14.2	.5

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 11

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS[1]	BASELINE VOLUME PER LAUNCH GAL OR CF
			EA 911 EPOXY EA 934 EPOXY EA 9309 EPOXY					
13	21	IN	TILE REPAIR FOAM	S	4.5	10.0	416.2	14.7
			POLYURETHANE		4.5	10.0	416.2	14.7
13	23	IN	K5NA INSULATION	S	10.4[17]	23.0[17]	84.9	3.0
			BUTYL GLYCIDYL ETHER EPOXY RESINS, UNCURED					
13	23	PS	SRB PROPELLANT SPILL	S	.0	.0	.0	.0
			AMMONIUM PERCHLORATE		.0	.0	.0	.0
			ALUMINUM POWDER		.0	.0	.0	.0
			PBAN BINDER		.0	.0	.0	.0
			HTPB BINDER		.0	.0	.0	.0
			IRON OXIDE		.0	.0	.0	.0
13	31	CA	CONTAMINATED AIR FILTERS	S	22.7	50.0	1415.8[18]	50.0[18]
13	31	CA	CHARCOAL FILTER WASTES	S	.0	.0	.0	.0
13	31	CA	CONTAMINATED AIR FILTERS	S	22.7	50.0	1415.8[18]	50.0[18]
13	31	CN	K5NA & MTA-2 PACKING MATERIALS	S	2267.9[19]	5000.0[19]	42474.0	1500.0
13	31	CR	SOLVENT CONTAMINATED RAGS	S	4.5[14]	10.0[14]	56.6	2.0
13	31	CR	ALODINE CONTAMINATED RAGS	S	2.3[14]	5.0[14]	28.3	1.0
13	31	CR	RYMPLE CLOTHS	S	4.5[14]	10.0[14]	56.6	2.0
13	31	CR	PAINT DROP CLOTHS	S	6.8[14]	15.0[14]	84.9	3.0
13	31	IN	MSA-1 (CURED)[20]	S	90.7	200.0	1248.7	44.1[21]
			EPICHLORHYDRIN/BGE		36.3	80.1		
			GLASS ECOSPHERES		10.7	23.6		
			PHENOLIC MICROSPHERES		32.2	70.9		
			GLASS FIBERS		4.0	8.8		
			BENTONE 27		3.0	6.7		
			METHYLENE DIANILINE		3.2	7.0		
			m-PHENYLENE DIAMINE		1.3	2.9		
13	31	IN	MTA-2 (CURED)[20]	S	45.4	100.0	4247.4	150.0
			EPICHLORHYDRIN/BGE		14.0	30.9		
			LP-3, POLYSULFIDE LIQ POLYMER		14.0	30.9		
			MDA & mPDA		5.6	12.3		
			STANNOUS OCTOATE		.5	1.2		
			PHENOLIC MICROSPHERES		11.2	24.7		

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
13	31	IN	K5NA	S	7.3	16.0	56.6	2.0
			BUTYL GLYCIDYL ETHER					
			EPOXY RESINS					
13	31	IN	INSULATION AND PAPER	S				
13	32	IN	INSULATION WASTES, SOLID	S	725.7(22)	1600.0(22)	11326.4(22)	400.0(22)
			MSA-1 INSULATION					
			MTA-2 INSULATION					
			K5NA INSULATION					
			PR-855 INSULATION					
13	32	IN	INSULATION CONTAM FILTERS	S	4.5	10.0	283.2(18)	10.0(18)
13	32	PS	SRB SOLID PROPELLANT	S	.0	.0	.0	.0
			AMMONIUM PERCHLORATE		.0	.0	.0	.0
			ALUMINUM POWDER		.0	.0	.0	.0
			FERRIC OXIDE		.0	.0	.0	.0
			POLYMER & EPOXY RESIN		.0	.0	.0	.0
13	33	CA	AIR FILTERS	S	4.5	10.0	283.2(18)	10.0(18)
13	99	AW	ISOCHEM POLYESTER RESIN ADHESV	S	5.9	13.0		
			STYRENE					
			MEK PEROXIDE CATALYST					
			DIMETHYL PHTHALATE					
13	99	CA	FILTER	S				
13	99	CR	SOLVENT CONTAMINATED RAGS(29)	S	4.5(14)	10.0(14)	56.6	2.0
13	99	CR	ADHESIVE CONTAMINATED RAGS	S	4.5(14)	10.0(14)	56.6	2.0
13	99	CR	EPOXY PRIMER-CONTAMINATED RAGS	S	2.3(14)	5.0(14)	28.3	1.0
13	99	IN	BX-250 FOAM (SOFI)	S	117.9(23)	260.0(23)	3681.1	130.0
			DIPHENYL METHANE DIISOCYANATE		29.5	65.0		
			FREON 11		19.1	42.0		
			AMINES		10.4	23.0		
			POLYOLS					
			SUPER MEK PEROXIDE					
			POLYESTER RESIN					
			DIMETHYL PHTHALATE					
13	99	IN	POUR FOAM (MIXED)	S	124.7(24)	275.0(24)	2775.0	98.0
			POLYURETHANE					
13	99	IN	POUR FOAM CONTAMINATED PAPER	S			311.5	11.0

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
13	99	IN	SUPER LIGHT ABLATOR (I)	S	4.5	10.0	424.7	15.0
			RESIN L664, PT A		2.7	5.9		
			SILICA FIBERS		.3	.6		
			CORK		.5	1.2		
			PHENOLIC MICROSPHERES		.1	.3		
			SILICA MICROSPHERES		.6	1.4		
			CURING AGENT		.3	.6		
13	99	IN	SUPER LIGHT ABLATOR (II)	S	4.5	10.0	424.7	15.0
			RESIN STM L664, PT A		1.4	3.0		
			CARBON POWDER					
			SILICA FIBERS					
			CORK					
			SILICA MICROSPHERES					
			PHENOLIC MICROSPHERES					
			CURING AGENT STM L664, PT B		.8	1.7		
13	99	IN	POUR FOAM "TRIMMINGS"	S	4.5	10.0	424.7	15.0
			POLYURETHANE					
TOTALS FOR TREATMENT CATEGORY 13								
NORTH VANDENBERG (SS 17,18,19,21)					36.0	79.3	1073.2	37.9
SOUTH VANDENBERG (SS 23,31,33,99)					2763.3	6092.0	59636.3	2106.1
PORT HUENEME (SS 32)					730.3	1610.0	11609.6	410.0
TOTAL					3529.5	7781.3	72319.1	2554.0
14	19	AW	TPS ADHESIVE, RTV 566/577	S	1.1	2.5	8.5	.3
			PHENYL METHYL POLYSILOXANE					
			TIN OXIDE					
			IRON OXIDE					
			SILICON					
			HARDENER					
14	19	CN	SPRAYCANS OF TPS SEALER	S				
			FLUORINATED SOLVENT					
			FREON 113					
14	19	CN	KOROPON PRIMER CONTAM CANS	S	6.8(25)	15.0(25)	56.6	2.0
			BUTYL ACETATE					
			METHYL ETHYL KETONE					
			TOLUENE					
			TALC - Mg SILICATES					
			EPOXY RESIN					
14	19	CN	LACQUER SPRAY CANS	S	2.7(26)	6.0(26)	28.3	1.0
			PIGMENT SOLIDS					
			VEHICLE SOLIDS					
			(CONT.)					

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS(1)	BASELINE VOLUME PER LAUNCH GAL OR CF
			TOLUENE					
			XYLENE					
			HYDROCARBON PROPELLANT					
			PETROLEUM DISTILLATES					
14	19	CN	ISP CONTAM CUPS & WOOD STICKS	S	.7(27)	1.5(27)	14.2	.5
			INSTANT SET POLYMER					
14	19	CN	MARSHALL STENCIL INK SPRAYCANS	S	.3	.6	2.8	.1
			XYLENE					
			NAPTHA					
			OTHER MATERIALS					
14	19	CN	LACQUER SPRAYCANS	S	2.2(26)	4.8(26)	22.7	.8
			PIGMENT SOLIDS					
			VEHICLE SOLIDS					
			TOLUENE					
			XYLENE					
			HYDROCARBON PROPELLANT					
			PETROLEUM DISTILLATES					
14	19	CN	ENAMEL SPRAYCANS	S	4.1(26)	9.0(26)	42.5	1.5
14	19	CN	ZINC CHROMATE PRIMER CANS	S	4.1(26)	9.0(26)	42.5	1.5
14	19	CN	CONTAMINATED TARE CUPS	S				
			EA 911 EPOXY					
			EA 934 EPOXY					
			EA 9309 EPOXY					
14	19	CR	CONTAM CLOTHES, CLOTH & DEBRIS	S	4.5(28)	10.0(28)	141.6	5.0
			KOROPON BASE PRIMER					
			KOROPON ACTIVATOR					
			BERYLLIUM DUST					
14	19	PA	CONTAMINATED BRUSHES	S	1.8(16)	4.0(16)	14.2	.5
			ORGANIC ZINC PRIMER					
			ZINC CHROMATE PRIMER					
14	21	WP	WASTE SEALS, FILTERS, ETC.	S	4.5	10.0	283.2	10.0
14	31	AW	EA 934 EPOXY ADHESIVE	S	15.9(18)	35.0(18)	84.9	3.0
			EPOXY RESIN		6.8	15.0		
			ASBESTOS		1.8	4.0		
			FILLERS		3.2	7.0		
			POLYAMIDE		3.6	8.0		
			DIETHYLENETRIAMINE		.5	1.0		
14	31	CN	BOSTIK PRIMER PAINT CANS	S	6.8(25)	15.0(25)	56.6	2.0

TABLE A-2 (CONT.) BASELINE GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	BASELINE WEIGHT PER LAUNCH POUNDS	BASELINE VOLUME PER LAUNCH LITERS[1]	BASELINE VOLUME PER LAUNCH GAL OR CF
14	31	CN	BOSTIK TOPCOAT PAINT CANS	S	20.4[25]	45.0[25]	169.9	6.0
14	31	CN	RUSTOLEUM PRIMER PAINT CANS	S	.9[25]	2.0[25]	8.5	.3
14	31	CN	RUSTOLEUM TOPCOAT PAINT CANS	S	.9[25]	2.0[25]	8.5	.3
14	31	CN	MSA-1 EMPTY CONTAINERS	S	453.6[19]	1000.0[19]	8494.8	300.0
14	31	CN	K5NA CONTAINERS	S	3.4[19]	7.5[19]	56.6	2.0
14	32	BA	LITHIUM STORAGE BATTERIES	S	24.5	54.0	42.5	1.5
14	32	BA	SILVER-ZINC STORAGE BATTERIES	S	40.8	90.0	51.0	1.8
14	99	AW	GX-6300 ABLATOR ADHESIVE	S	5.9	13.0		
			RESIN STM L 663		.6	1.3		
			RESIN STM L 664		2.2	4.8		
			SILICA POWDER		.2	.4		
			CARBON POWDER		.2	.4		
			CURING AGENT L 663		.2	.5		
			CURING AGENT L 664		<.1	.1		
			HEPTANE		2.4	5.2		
			XYLENE		.1	.3		
14	99	CN	SOLVENT CONTAMINATED CONTAINER SOLVENTS[29]	S	2.3[19]	5.0[19]	42.5	1.5
14	99	CN	PRIMER CONTAMINATED CONTAINERS	S	.3[19]	.7[19]	5.7	.2
14	99	CN	ADHESIVE CONTAMINATED CONTAINR	S	.3[19]	.7[19]	5.7	.2
14	99	CN	SOLVENT CONTAINERS	S				
14	99	CN	POUR FOAM CONTAINERS	S	22.7[19]	50.0[19]	379.4	13.4
14	99	CN	ABLATOR CONTAMINATED CONTAINER	S	.3[19]	.7[19]	5.7	.2
TOTALS FOR TREATMENT CATEGORY 14								
NORTH VANDENBERG (SS 17,18,19,21)					32.8	72.4	656.9	23.2
SOUTH VANDENBERG (SS 23,31,33,99)					533.7	1176.6	9318.8	329.1
PORT HUENEME (SS 32)					65.3	144.0	93.4	3.3
TOTAL					631.9	1393.0	10069.2	355.6
15	17	EW	WASTEWATER FROM EEW&S	L	2725.4	6008.4	2725.2	720.0[30]
15	19	EW	WASTEWATER FROM EEW&S	L	3028.2	6676.0	3028.0	800.0[30]
15	19	SW	WASHWATER WITH MEK (CONT.)	L	42.4	93.5	45.4	12.0

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	BASELINE WEIGHT PER LAUNCH KILOGRAMS	POUNDS	BASELINE VOLUME PER LAUNCH LITERS[1]	GAL OR CF
			METHYL ETHYL KETONE		6.1	13.5	7.6	2.0
15	21	EW	WASTEWATER FROM EEW&S	L	2725.4	6008.4	2725.2	720.0[30]
15	21	SW	WASTEWATER WITH MEK	L	42.4	93.4	45.4	12.0
			METHYL ETHYL KETONE		6.1	13.4	7.6	2.0
15	23	EW	WASTEWATER FROM EEW&S	L	3028.2	6676.0	3028.0	800.0[30]
15	23	SW	SOLVENT WASTEWATER UNSPEC.	L	416.4	918.0	416.3	110.0
15	23	SW	CONTAMINATED WASTEWATER	L	946.2	2086.0	946.3	250.0
			SOLVENTS					
			CHLORINATED RUBBER					
			ZINC PRIMER					
15	31	EW	WASTEWATER FROM EEW&S	L	1211.3	2670.4	1211.2	320.0[30]
15	32	EW	WASTEWATER FROM EEW&S	L	605.6	1335.2	605.6	160.0[30]
15	32	IW	INSULATION-CONTAMINATED WATER	L	185291.5	408500.0	185313.6	48960.0
			MSA-1 INSULATION					
			MTA-2 INSULATION					
			K5NA INSULATION					
			PR-855 INSULATION					
15	33	EW	WASTEWATER FROM EEW&S	L	189.1	417.0	189.3	50.0[30]
15	99	SW	SOLVENT CONTAMINATED WATER	L	81.0	178.6	113.6	30.0
TOTALS FOR TREATMENT CATEGORY 15								
NORTH VANDENBERG (SS 17,18,19,21)					8563.6	18879.7	8569.2	2264.0
SOUTH VANDENBERG (SS 23,31,33,99)					5872.2	12946.0	5904.6	1560.0
PORT HUENEME (SS 32)					185897.1	409835.2	185919.2	49120.0
TOTAL					200332.9	441660.9	200393.0	52944.0
26[31]	32	CW	SRB FWD SKT CLEANING WASTES	L				
TOTALS FOR TREATMENT CATEGORY 26[31]								
NORTH VANDENBERG (SS 17,18,19,21)								
SOUTH VANDENBERG (SS 23,31,33,99)								
PORT HUENEME (SS 32)								
TOTAL								

1. Metric volume is given in liters for both solids and liquids. To convert the volume of a solid to cubic meters, divide liters by 1,000.

2. Station Set Zero is used for wastes which are generated from space shuttle operations at a place other than a designated station set.

3. This assumes that cleaning the scapesuits will require approximately 2 gal (7.6 l) of freon per scapesuit.

4. Primol 355 is a high-viscosity mineral oil. Its use requires a design decision and Air Force approval. This or another oil or a foam will be used to prevent vaporization of hypergols.

5. Operation generating the waste occurs once every five launches. The amount per launch represents one-fifth of the total amount of waste generated per operation.

6. This assumes a density of 0.8 g/ml (6.7 lb/gal).

7. This assumes the density of water (1.0 g/ml, or 8.3 lb/gal).

8. This assumes a density of 1.4 g/ml (11.7 lb/gal).

9. Insulation is unmixed, but is disposed of because shelf life was exceeded.

10. This assumes that 10 percent of total amount used becomes waste.

11. Nature of contaminants is not known.

12. Contains unidentified surfactants and/or detergents.

13. This assumes scrubber is 90 percent efficient.

14. Contaminated rags are assumed to weigh 5 lb/ft^3 (0.08 g/cc).

15. Density is assumed to be 5 lb/ft^3 (0.08 g/cc).

16. Paint brushes are assumed to weigh 8 lb/ft^3 (0.13 g/cc).

17. This assumes a density of 0.12 g/ml (1.0 lb/gal).

18. Filters are assumed to weigh 1 lb/ft^3 (0.016 g/cc).

19. Containers and packing materials are assumed to weigh 0.33 lb/ft^3 (0.005 g/cc).

20. Insulation is mixed, but not used.

21. Volume based on number of 55-gal drums used.

22. Quantities ignore loss of material due to burnoff on reentry.

23. This assumes a density of 2 lb/ft^3 (0.03 g/cc).

24. This assumes a density of 2.8 lb/ft^3 (0.045 g/cc).

25. Large paint cans are assumed to weigh 1 lb per empty gallon can (7.5 lb/ft^3, or 0.12 g/cc).

26. Spray cans and small paint cans are assumed to weigh 6 lb/ft^3 of empty cans (0.10 g/cc).

27. Cups and wood sticks are assumed to weigh 3 lb/ft^3 (0.05 g/cc).

28. Contaminated cloths, clothes, and debris are assumed to weigh 2 lb/ft^3 (0.03 g/cc).

29. Contains Freon TMC, trichloroethane, methyl ethyl ketone, and cellosolve.

30. Baseline amounts assume that each scapesuit at a given station set is prerinsed with 40 gal (150 l) of EEW&S water once every launch cycle.

31. Treatment Category 26 contains those wastes whose nature is not known.

TABLE A-3. CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS[1]	CONTINGENCY VOLUME PER EVENT GAL OR CF
1	0[2]	SO	CONTAMINATED FREON	L	.0	.0	.0	.0
1	31	SO	FREON 113	L	.0	.0	.0	.0
1	99	SO	FREON TMC	L	.0	.0	.0	.0
2	17	FS	CONTAMINATED DILUTION WATER MMH	L				
2	19	FS	WASTEWATER FROM PAYLOAD/ORB MMH	L	.0 .0	.0 .0	.0 .0	.0 .0
2	19	FS	WASTE FUEL AND PRIMOL 355[3] HYDRAZINE MMH	L				
2	19	HY	HYDRAZINE	L	4989.5[4]	11000.0[4]	4969.7[4]	1313.0[4]
2	19	HY	HYDRAZINE	L	68.0[4]	150.0[4]	68.1[4]	18.0[4]
2	19	MH	MONOMETHYL HYDRAZINE	L	.0	.0	.0	.0
2	19	MH	MONOMETHYL HYDRAZINE	L	.0	.0	.0	.0
2	19	MH	MONOMETHYL HYDRAZINE	L	214.5[4]	473.0[4]	246.0[4]	65.0[4]
2	19	MH	MONOMETHYL HYDRAZINE	L	296.6[4]	654.0[4]	340.6[4]	90.0[4]
2	19	MH	MONOMETHYL HYDRAZINE	L	365.6[4]	806.0[4]	416.3[4]	110.0[4]
2	19	MH	MONOMETHYL HYDRAZINE	L	.0	.0	.0	.0
2	21	FS	WASTEWATER WITH MMH MMH	L	.0 .0	.0 .0	.0 .0	.0 .0
2	21	MH	MONOMETHYL HYDRAZINE[5]	L				
2	23	FS	HYDRAZINE-CONTAM. WASTEWATER HYDRAZINE	L				
2	23	FS	HYDRAZINE-CONTAM. CLNUP WATER (CONT.)	L				

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 2

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS[1]	CONTINGENCY VOLUME PER EVENT GAL OR CF
			HYDRAZINE					
2	23	FS	WASTEWATER FROM PPR HYDRAZINE	L				
2	23	FS	PRIMOL 355[3] HYDRAZINE MMH	L				
2	23	HY	HYDRAZINE	L	.0	.0	.0	.0
2	23	HY	LBM PROPELLANT PARAHYDRAZINE UNSYM DIMETHYLHYDRAZINE	L	79378.3[6] 39689.1 39689.1	175000.0[6] 87500.0 87500.0	79373.3[6] .0 .0	20970.5[6] .0 .0
2	23	HY	HYDRAZINE	L	5425.4[6]	11961.0[6]	5425.0[6]	1433.3[6]
2	23	MH	MONOMETHYL HYDRAZINE	L	.0	.0	.0	.0
2	23	MH	MONOMETHYL HYDRAZINE	L	12052.3[6]	26571.0[6]	12051.4[6]	3184.0[6]
2	31	FS	PRIMOL 355[3]	L				
2	31	HY	HYDRAZINE	L	.0	.0	.0	.0
2	32	CB	HYDRAZINE-CONTAMINATED WATER	L	.0	.0	.0	.0
2	32	FS	WASTE FUEL & PRIMOL 355[3] HYDRAZINE	L				
2	32	HY	HYDRAZINE	L	.0	.0	.0	.0
3	17	FO	DIESEL FUEL	L	.0	.0	.0	.0
3	17	FO	DIESEL FUEL & OIL	L	.0	.0	.0	.0
3	18	HF	HYDRAULIC FLUIDS	L	.0	.0	.0	.0
3	19	HF	VACUUM PUMP OIL TEXACO REGAL OIL 068	L	.0 .0	.0 .0	.0 .0	.0 .0
3	23	HF	HYDRAULIC FLUIDS (CONT.)	L	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA CAT	CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
			TETRAORTHOCRESOL PHOSPHATE		.0	.0	.0	.0
3	31	FO	FUEL AND OIL SPILLS	L				
3	31	FO	FUEL & OIL WASTES	L	.0	.0	.0	.0
3	32	FO	DIESEL FUEL & OIL SPILLS	L				
3	32	PR	PRESERVATIVE CHEMICALS PROTECTIVE LUBRICANTS	L				
3	33	HF	HYDRAULIC FLUIDS	L	.0	.0	.0	.0
3	99	SO	HEPTANE	L	.0	.0	.0	.0
4	32	FO	BILGE WASTES	L	.0	.0	.0	.0
5	19	AW	EA 911 EPOXY	L	.0	.0	.0	.0
			EPOXY		.0	.0	.0	.0
			ZINC CHROMATE		.0	.0	.0	.0
			ASBESTOS		.0	.0	.0	.0
			MERCAPTAN		.0	.0	.0	.0
			DIMETHYLAMINE		.0	.0	.0	.0
5	19	AW	EA 934 EPOXY	L	.0	.0	.0	.0
			EPOXY RESIN		.0	.0	.0	.0
			ASBESTOS		.0	.0	.0	.0
5	19	AW	EA 9309 EPOXY	L	.0	.0	.0	.0
			EPOXY RESIN		.0	.0	.0	.0
			GLASS FIBERS		.0	.0	.0	.0
			ACRYLONITRILE/BUTADIEN/STYRENE		.0	.0	.0	.0
			ASBESTOS		.0	.0	.0	.0
			POLYGLYCOL DIAMINE		.0	.0	.0	.0
			SILANE		.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 4

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
5	19	PA	LACQUER #626486	L	.0	.0	.0	.0
5	19	PA	ORGANIC ZINC PRIMER	L	.0	.0	.0	.0
			ZINC DUST		.0	.0	.0	.0
			BARYTES		.0	.0	.0	.0
			MOLYBDATE ORANGE		.0	.0	.0	.0
			SILICA		.0	.0	.0	.0
			HIGH MOLECULAR WEIGHT EPOXY		.0	.0	.0	.0
			CELLOSOLVE ACETATE		.0	.0	.0	.0
			TOLUENE		.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
5	19	SO	DOPE & LACQUER THINNER	L	.0	.0	.0	.0
			ALIPHATIC NAPTHA		.0	.0	.0	.0
			ESTER OR KETONE		.0	.0	.0	.0
			ISO- OR n-BUTYL ACETATE		.0	.0	.0	.0
			ISO- OR n-BUTYL ALCOHOL		.0	.0	.0	.0
5	23	SO	SOLVENT MIXTURE	L	.0	.0	.0	.0
			FREON TMC/MF/TF		.0	.0	.0	.0
			SYM. TETRACHLOROETHANE		.0	.0	.0	.0
5	23	SO	CONTAMINATED SOLVENTS	L	.0	.0	.0	.0
5	31	IN	MSA-1, PART A (UNMIXED)	L	.0	.0	.0	.0
			METHYLENE CHLORIDE		.0	.0	.0	.0
			EPICHLORHYDRIN/BGE		.0	.0	.0	.0
5	31	IN	MSA-1, PART B (UNMIXED)	L	.0	.0	.0	.0
			METHYLENE CHLORIDE		.0	.0	.0	.0
			PERCHLOROETHYLENE		.0	.0	.0	.0
			METHYLENE DIANILINE		.0	.0	.0	.0
			m-PHENYLENE DIAMINE		.0	.0	.0	.0
			ETHYL ALCOHOL		.0	.0	.0	.0
			PHENOLIC MICROSPHERES		.0	.0	.0	.0
			GLASS ECOSPHERES		.0	.0	.0	.0
			GLASS FIBERS		.0	.0	.0	.0
			BENTONE 27		.0	.0	.0	.0
5	31	IN	MTA-2 (UNMIXED)	L	.0	.0	.0	.0
			EPICHLORHYDRIN/BGE		.0	.0	.0	.0
			LP-3, POLYSULFIDE LIQ POLYMER		.0	.0	.0	.0
			MDA & mPDA		.0	.0	.0	.0
			STANNOUS OCTOATE		.0	.0	.0	.0
			PHENOLIC MICROSPHERES		.0	.0	.0	.0
			METHYLENE CHLORIDE		.0	.0	.0	.0
			PERCHLOROETHYLENE		.0	.0	.0	.0
5	31	PA	BOSTIK EPOXY PRIMER (CONT.)	L	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
			EPOXY RESIN		.0	.0	.0	.0
			AMINE CURING AGENT		.0	.0	.0	.0
			TITANIUM DIOXIDE		.0	.0	.0	.0
			CHROMATE PIGMENTS		.0	.0	.0	.0
			INERT PIGMENTS		.0	.0	.0	.0
			SUSPENSION & FLOW CONTROL ADDI		.0	.0	.0	.0
			SOLVENTS		.0	.0	.0	.0
5	31	PA	BOSTIK EPOXY TOPCOAT	L	.0	.0	.0	.0
			EPICHLORHYDRIN/BISPHENOL A		.0	.0	.0	.0
			AMINE CURING AGENT		.0	.0	.0	.0
			COLOR PIGMENT		.0	.0	.0	.0
			SUSPENSION & FLOW CONTROL ADDI		.0	.0	.0	.0
			SOLVENTS PHOTOCHEM REACTIVE		.0	.0	.0	.0
			SOLVENTS NONPHOTOCHEM REACTIVE		.0	.0	.0	.0
5	31	PA	RUSTOLEUM PRIMER	L	.0	.0	.0	.0
			SILICATES		.0	.0	.0	.0
			YELLOW IRON OXIDE		.0	.0	.0	.0
			TITANIUM DIOXIDE		.0	.0	.0	.0
			CALCIUM BOROSILICATE		.0	.0	.0	.0
			BENTONITE		.0	.0	.0	.0
			LINSEED PHENOLIC ALKYL RESIN		.0	.0	.0	.0
			ALIPHATIC HYDROCARBONS		.0	.0	.0	.0
			DRIERS AND ADDITIVES		.0	.0	.0	.0
5	31	PA	RUSTOLEUM TOPCOAT	L	.0	.0	.0	.0
			SILICATES		.0	.0	.0	.0
			TITANIUM DIOXIDE		.0	.0	.0	.0
			BENTONITE CLAY		.0	.0	.0	.0
			TINTING COLORS		.0	.0	.0	.0
			ALKYL RESIN		.0	.0	.0	.0
			ALIPHATIC HYDROCARBONS		.0	.0	.0	.0
			DRIERS & ADDOTIVES		.0	.0	.0	.0
5	31	PA	GACOFLEX	L	.0	.0	.0	.0
			TITANIUM DIOXIDE		.0	.0	.0	.0
			CLAY		.0	.0	.0	.0
			HYPALON		.0	.0	.0	.0
			HYDROCARBON RESIN		.0	.0	.0	.0
			PERCHLOROETHYLENE		.0	.0	.0	.0
			1,1,1-TRICHLOROETHANE		.0	.0	.0	.0
			EPOXIDIZED SOYBEAN OIL		.0	.0	.0	.0
5	31	PA	PAINT-SPILL ABSORBANT	L				
5	31	SO	PERCHLOROETHYLENE	L	.0	.0	.0	.0
5	31	SO	TRICHLOROETHANE	L	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 6

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
5	31	SO	MSA-1 CONTAMINATED MECl	L	.0	.0	.0	.0
5	31	SO	MSA-1 CONTAM PERCHLOROETHYLENE	L	.0	.0	.0	.0
5	31	SO	PERCHLOROETHYLENE	L	.0	.0	.0	.0
5	31	SO	TRICHLOROETHANE	L	.0	.0	.0	.0
5	31	SO	METHYLENE CHLORIDE	L	.0	.0	.0	.0
5	31	SO	MTA-2 CONTAMINATED SOLVENTS	L	.0	.0	.0	.0
5	31	SO	BOSTIK CONTAMINATED SOLVENTS	L	.0	.0	.0	.0
5	31	SO	RUSTOLEUM CONTAMINATED SOLVENT	L	.0	.0	.0	.0
5	32	SO	SOLVENTS	L	.0	.0	.0	.0
			FREON TMC/TM		.0	.0	.0	.0
			SOLVENTS, UNSPECIFIED		.0	.0	.0	.0
5	99	IN	POUR FOAM PART A (UNMIXED)	L	.0	.0	.0	.0
			DIPHENYL METHANE DIISOCYANATE		.0	.0	.0	.0
			FREON 11		.0	.0	.0	.0
			POLYOLS, AMINES		.0	.0	.0	.0
5	99	IN	POUR FOAM PART B (UNMIXED)	L	.0	.0	.0	.0
			FREON 11		.0	.0	.0	.0
			AMINE CATALYST		.0	.0	.0	.0
			POLYETHER POLYOL BLEND		.0	.0	.0	.0
5	99	PA	EPOXY PRIMER	L	.0	.0	.0	.0
			METHYLENE ISOBUTYL KETONE		.0	.0	.0	.0
			XYLENE		.0	.0	.0	.0
			CYCLOHEXANONE		.0	.0	.0	.0
			CHROMATES		.0	.0	.0	.0
			INORGANIC PIGMENTS		.0	.0	.0	.0
			N-BUTANOL		.0	.0	.0	.0
			TOLUENE		.0	.0	.0	.0
			AMINO SILANE		.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
5	99	PA	D.C. 1200	L	.0	.0	.0	.0
			VM AND P NAPTHA		.0	.0	.0	.0
			ORGANOMETALLIC SALTS		.0	.0	.0	.0
5	99	SO	1,1,1-TRICHLOROETHANE	L	.0	.0	.0	.0
5	99	SO	MEK & CELLOSOLVE	L	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
5	99	SO	CELLOSOLVE ACETATE	L	.0	.0	.0	.0
5	99	SO	METHYL ETHYL KETONE	L	.0	.0	.0	.0
5	99	SR	SOLVENT REDUCER	L	.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
			CYCLOHEXANONE		.0	.0	.0	.0
8	31	PW	ALODINE CONTAMINATED WASTEWATR	L	.0	.0	.0	.0
			CHROMIC ACID		.0	.0	.0	.0
			FERRICYANIDE SALT		.0	.0	.0	.0
			COMPLEX FLUORIDE SALT		.0	.0	.0	.0
8	32	BA	POTASSIUM HYDROXIDE SOLUTION	L	.0	.0	.0	.0
9	32	CS	CONTAMINATED SEAWATER(7)	L				
9	32	CS	CONTAMINATED SEAWATER	L	.0	.0	.0	.0
9	32	SB	DETERGENT WASHWATER	L	.0	.0	.0	.0
9	32	SB	POTABLE RINSE WATER	L	.0	.0	.0	.0
9	32	SB	DEIONIZED RINSE WATER	L	.0	.0	.0	.0
9	32	SI	SRB RINSE WATER	L	.0	.0	.0	.0
10	17	OS	CONTAMINATED DILUTION WATER (CONT.)	L				

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 8

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
			N2O4					
10	19	NH	WASTEWATER WITH AMMONIA	L	.0	.0	.0	.0
10	19	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	19	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	19	NO	NITROGEN TETROXIDE	L	326.1(4)	719.0(4)	227.1(4)	60.0(4)
10	19	NO	NITROGEN TETROXIDE	L	465.8(4)	1027.0(4)	325.5(4)	86.0(4)
10	19	NO	NITROGEN TETROXIDE	L	572.4(4)	1262.0(4)	397.4(4)	105.0(4)
10	19	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	19	NO	NITROGEN TETROXIDE	L	8164.6(4)	18000.0(4)	5677.5(4)	1500.0(4)
10	19	OS	DECONTAMINATE FROM PAYLOAD/ORB N2O4	L	.0 .0	.0 .0	.0 .0	.0 .0
10	19	OS	WASTE OXIDIZER AND PRIMOL 355(3) N2O4	L				
10	21	NO	NITROGEN TETROXIDE	L	4898.8(5)	10800.0(5)	3406.5(5)	900.0(5)
10	21	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	21	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	21	NO	NITROGEN TETROXIDE	L	4898.8(8)	10800.0(8)	3406.5(8)	900.0(8)
10	21	OS	WASTEWATER WITH OXIDIZER N2O4	L	.0 .0	.0 .0	.0 .0	.0 .0
10	23	NH	AMMONIA	L	47.2	104.0	61.3	16.2
10	23	NO	NITROGEN TETROXIDE	L	.0	.0	.0	.0
10	23	NO	LBM OXIDIZER NITROGEN TETROXIDE	L	79378.3(6) 79378.3	175000.0(6) 175000.0	53254.9(6)	14070.0(6)
10	23	NO	NITROGEN TETROXIDE	L	28129.8(6)	62016.0(6)	19398.9(6)	5125.2(6)
10	23	OS	N2O4 CONTAM. CLEANUP WATER NITROGEN TETROXIDE	L				
10	23	OS	N2O4 CONTAM. WASTEWATER NITROGEN TETROXIDE	L	.0 .0	.0 .0	.0 .0	.0 .0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
10	23	OS	PRIMOL 355(3)	L				
			N2O4					
10	23	QW	DELUGE WATER	L	.0	.0	.0	.0
			ALUMINUM OXIDE		.0	.0	.0	.0
			AMMONIA		.0	.0	.0	.0
			HYDROCHLORIC ACID		.0	.0	.0	.0
			ORGANIC CARBON		.0	.0	.0	.0
10	31	AL	SURFACTANT	L	.0	.0	.0	.0
			NaOH		.0	.0	.0	.0
			SODIUM TRIPOLYPHOSPHATE		.0	.0	.0	.0
11	19	HS	FUEL SCRUBBER	L	.0	.0	.0	.0
			HYDRAZINE		.0	.0	.0	.0
			MMH		.0	.0	.0	.0
11	21	HS	FUEL SCRUBBER	L	.0	.0	.0	.0
			MMH		.0	.0	.0	.0
11	23	HS	HYDRAZINE & MMH SCRUBBER	L	.0	.0	.0	.0
			HYDRAZINE		.0	.0	.0	.0
			MMH		.0	.0	.0	.0
11	31	HS	SCRUBBER EFFLUENT	L	.0	.0	.0	.0
11	32	HS	HYDRAZINE SCRUBBER EFFLUENT	L	.0	.0	.0	.0
			HYDRAZINE		.0	.0	.0	.0
13	19	CR	RAGS WITH SOLVENTS, GREASES	S	.0	.0	.0	.0
13	19	CR	SOLVENT-CONTAM CHEESECLOTH	S	.0	.0	.0	.0
			ISOPROPYL ALCOHOL		.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
			(CONT.)					

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 10

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
			1,1,1-TRICHLOROETHANE		.0	.0	.0	.0
13	19	CR	MEK & IPA CONTAM CHEESECLOTH	S	.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
			ISOPROPYL ALCOHOL		.0	.0	.0	.0
13	19	CR	IPA CONTAMINATED CHEESECLOTH	S	.0	.0	.0	.0
			ISOPROPYL ALCOHOL		.0	.0	.0	.0
13	19	CR	TCE CONTAMINATED CHEESECLOTH	S	.0	.0	.0	.0
			1,1,1-TRICHLOROETHANE		.0	.0	.0	.0
13	19	CR	MEK CONTAMINATED CHEESECLOTH	S	.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
13	19	CR	IPA CONTAMINATED CHEESECLOTH	S	.0	.0	.0	.0
			ISOPROPYL ALCOHOL		.0	.0	.0	.0
13	19	CR	SOLID FILM LUBRIC CONT CHSCLTH	S	.0	.0	.0	.0
13	19	CR	IPA CONTAMINATED CHEESECLOTH	S	.0	.0	.0	.0
			ISOPROPYL ALCOHOL		.0	.0	.0	.0
13	19	CR	DICHLOROMETHANE CONT CHSECLTH	S	.0	.0	.0	.0
13	19	IN	POLYURETHANE FOAM	S	.0	.0	.0	.0
13	19	IN	ALUMACAST A/B MIXTURE	L	.0	.0	.0	.0
			POLYOXPROPLENE PENTAERYTHRITOL		.0	.0	.0	.0
			AROMATIC WHITE OIL		.0	.0	.0	.0
			INERT ALUMINIZED PARTICLES		.0	.0	.0	.0
			DIPHENYLMETHANE DIISOCYANATE		.0	.0	.0	.0
			POLYMERS OF DPM DIISOCYANATE		.0	.0	.0	.0
13	19	IN	INSTANT SET POLYMER SCRAPS	S	.0	.0	.0	.0
			DIPHENYL METHANE DIISOCYANATE		.0	.0	.0	.0
			POLY(OXALKYLENE)POLYETHER		.0	.0	.0	.0
			AROMATIC HYDROCARBONS		.0	.0	.0	.0
13	19	IN	SILANE/ACETIC ACID RESIDUE	S	.0	.0	.0	.0
			METHYL TRIMETHOXYSILANE		.0	.0	.0	.0
			ACETIC ACID		.0	.0	.0	.0
13	19	PA	KOROPON PRMER CONT PNT BRUSHES	S	.0	.0	.0	.0
			BUTYL ACETATE		.0	.0	.0	.0
			TALC - Mg SILICATES		.0	.0	.0	.0
			EPOXY RESIN		.0	.0	.0	.0
13	19	PA	CONTAMINATED PAINT BRUSHES (CONT.)	S	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
			EA 911 EPOXY		.0	.0	.0	.0
			EA 934 EPOXY		.0	.0	.0	.0
			EA 9309 EPOXY		.0	.0	.0	.0
13	21	IN	TILE REPAIR FOAM	S	.0	.0	.0	.0
			POLYURETHANE		.0	.0	.0	.0
13	23	IN	K5NA INSULATION	S	.0	.0	.0	.0
			BUTYL GLYCIDYL ETHER		.0	.0	.0	.0
			EPOXY RESINS, UNCURED		.0	.0	.0	.0
13	23	PS	SRB PROPELLANT SPILL	S	504301.3(9)	1111800.0(9)	261436.0(9)	9232.8(9)
			AMMONIUM PERCHLORATE		351033.3	773900.0		
			ALUMINUM POWDER		80648.3	177800.0		
			PBAN BINDER		70578.6	155600.0		
			HTPB BINDER		33.1	73.0		
			IRON OXIDE		2018.5	4450.0		
13	31	CA	CONTAMINATED AIR FILTERS	S	.0	.0	.0	.0
13	31	CA	CHARCOAL FILTER WASTES	S	.0	.0	.0	.0
13	31	CA	CONTAMINATED AIR FILTERS	S	.0	.0	.0	.0
13	31	CN	K5NA & MTA-2 PACKING MATERIALS	S	.0	.0	.0	.0
13	31	CR	SOLVENT CONTAMINATED RAGS	S	.0	.0	.0	.0
13	31	CR	ALODINE CONTAMINATED RAGS	S	.0	.0	.0	.0
13	31	CR	RYMPLE CLOTHS	S	.0	.0	.0	.0
13	31	CR	PAINT DROP CLOTHS	S	.0	.0	.0	.0
13	31	IN	MSA-1 (CURED)	S	.0	.0	.0	.0
			EPICHLORHYDRIN/BGE /		.0	.0	.0	.0
			GLASS ECOSPHERES		.0	.0	.0	.0
			PHENOLIC MICROSPHERES		.0	.0	.0	.0
			GLASS FIBERS		.0	.0	.0	.0
			BENTONE 27		.0	.0	.0	.0
			METHYLENE DIANILINE		.0	.0	.0	.0
			m-PHENYLENE DIAMINE		.0	.0	.0	.0
13	31	IN	MTA-2 (CURED)	S	.0	.0	.0	.0
			EPICHLORHYDRIN/BGE		.0	.0	.0	.0
			LP-3, POLYSULFIDE LIQ POLYMER		.0	.0	.0	.0
			MDA & mPDA		.0	.0	.0	.0
			STANNOUS OCTOATE		.0	.0	.0	.0
			PHENOLIC MICROSPHERES		.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 12

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
13	31	IN	K5NA	S	.0	.0	.0	.0
			BUTYL GLYCIDYL ETHER		.0	.0	.0	.0
			EPOXY RESINS		.0	.0	.0	.0
13	31	IN	INSULATION AND PAPER	S	.0	.0	.0	.0
13	32	IN	INSULATION WASTES, SOLID	S	.0	.0	.0	.0
			MSA-1 INSULATION		.0	.0	.0	.0
			MTA-2 INSULATION		.0	.0	.0	.0
			K5NA INSULATION		.0	.0	.0	.0
			PR-855 INSULATION		.0	.0	.0	.0
13	32	IN	INSULATION CONTAM FILTERS	S	.0	.0	.0	.0
13	32	PS	SRB SOLID PROPELLANT	S	78.5(10)	173.0(10)	39.6(10)	1.4(10)
			AMMONIUM PERCHLORATE		54.4	120.0		
			ALUMINUM POWDER		12.7	28.0		
			FERRIC OXIDE		.5	1.0		
			POLYMER & EPOXY RESIN		10.9	24.0		
13	33	CA	AIR FILTERS	S	.0	.0	.0	.0
13	99	AW	ISOCHEM POLYESTER RESIN ADHESV	S	.0	.0	.0	.0
			STYRENE		.0	.0	.0	.0
			MEK PEROXIDE CATALYST		.0	.0	.0	.0
			DIMETHYL PHTHALATE		.0	.0	.0	.0
13	99	CA	FILTER	S	.0	.0	.0	.0
13	99	CR	SOLVENT CONTAMINATED RAGS	S	.0	.0	.0	.0
13	99	CR	ADHESIVE CONTAMINATED RAGS	S	.0	.0	.0	.0
13	99	CR	EPOXY PRIMER-CONTAMINATED RAGS	S	.0	.0	.0	.0
13	99	IN	BX-250 FOAM (SOFI)	S	.0	.0	.0	.0
			DIPHENYL METHANE DIISOCYANATE		.0	.0	.0	.0
			FREON 11		.0	.0	.0	.0
			AMINES		.0	.0	.0	.0
			POLYOLS		.0	.0	.0	.0
			SUPER MEK PEROXIDE		.0	.0	.0	.0
			POLYESTER RESIN		.0	.0	.0	.0
			DIMETHYL PHTHALATE		.0	.0	.0	.0
13	99	IN	POUR FOAM (MIXED)	S	.0	.0	.0	.0
			POLYURETHANE		.0	.0	.0	.0
13	99	IN	POUR FOAM CONTAMINATED PAPER	S	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
13	99	IN	SUPER LIGHT ABLATOR (I)	S	.0	.0	.0	.0
			RESIN L664, PT A		.0	.0	.0	.0
			SILICA FIBERS		.0	.0	.0	.0
			CORK		.0	.0	.0	.0
			PHENOLIC MICROSPHERES		.0	.0	.0	.0
			SILICA MICROSPHERES		.0	.0	.0	.0
			CURING AGENT		.0	.0	.0	.0
13	99	IN	SUPER LIGHT ABLATOR (II)	S	.0	.0	.0	.0
			RESIN STM L664, PT A		.0	.0	.0	.0
			CARBON POWDER		.0	.0	.0	.0
			SILICA FIBERS		.0	.0	.0	.0
			CORK		.0	.0	.0	.0
			SILICA MICROSPHERES		.0	.0	.0	.0
			PHENOLIC MICROSPHERES		.0	.0	.0	.0
			CURING AGENT STM L664, PT B		.0	.0	.0	.0
13	99	IN	POUR FOAM "TRIMMINGS"	S	.0	.0	.0	.0
			POLYURETHANE		.0	.0	.0	.0
14	19	AW	TPS ADHESIVE, RTV 566/577	S	.0	.0	.0	.0
			PHENYL METHYL POLYSILOXANE		.0	.0	.0	.0
			TIN OXIDE		.0	.0	.0	.0
			IRON OXIDE		.0	.0	.0	.0
			SILICON		.0	.0	.0	.0
			HARDENER		.0	.0	.0	.0
14	19	CN	SPRAYCANS OF TPS SEALER	S	.0	.0	.0	.0
			FLUORINATED SOLVENT		.0	.0	.0	.0
			FREON 113		.0	.0	.0	.0
14	19	CN	KOROPON PRIMER CONTAM CANS	S	.0	.0	.0	.0
			BUTYL ACETATE		.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
			TOLUENE		.0	.0	.0	.0
			TALC - Mg SILICATES		.0	.0	.0	.0
			EPOXY RESIN		.0	.0	.0	.0
14	19	CN	LACQUER SPRAY CANS	S	.0	.0	.0	.0
			PIGMENT SOLIDS		.0	.0	.0	.0
			VEHICLE SOLIDS		.0	.0	.0	.0
			(CONT.)					

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT SET	STA	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	GAL OR CF
			TOLUENE		.0	.0	.0	.0
			XYLENE		.0	.0	.0	.0
			HYDROCARBON PROPELLANT		.0	.0	.0	.0
			PETROLEUM DISTILLATES		.0	.0	.0	.0
14	19	CN	ISP CONTAM CUPS & WOOD STICKS	S	.0	.0	.0	.0
			INSTANT SET POLYMER		.0	.0	.0	.0
14	19	CN	MARSHALL STENCIL INK SPRAYCANS	S	.0	.0	.0	.0
			XYLENE		.0	.0	.0	.0
			NAPTHA		.0	.0	.0	.0
			OTHER MATERIALS		.0	.0	.0	.0
14	19	CN	LACQUER SPRAYCANS	S	.0	.0	.0	.0
			PIGMENT SOLIDS		.0	.0	.0	.0
			VEHICLE SOLIDS		.0	.0	.0	.0
			TOLUENE		.0	.0	.0	.0
			XYLENE		.0	.0	.0	.0
			HYDROCARBON PROPELLANT		.0	.0	.0	.0
			PETROLEUM DISTILLATES		.0	.0	.0	.0
14	19	CN	ENAMEL SPRAYCANS	S	.0	.0	.0	.0
14	19	CN	ZINC CHROMATE PRIMER CANS	S	.0	.0	.0	.0
14	19	CN	CONTAMINATED TARE CUPS	S	.0	.0	.0	.0
			EA 911 EPOXY		.0	.0	.0	.0
			EA 934 EPOXY		.0	.0	.0	.0
			EA 9309 EPOXY		.0	.0	.0	.0
14	19	CR	CONTAM CLOTHES, CLOTH & DEBRIS	S	.0	.0	.0	.0
			KOROPON BASE PRIMER		.0	.0	.0	.0
			KOROPON ACTIVATOR		.0	.0	.0	.0
			BERYLLIUM DUST		.0	.0	.0	.0
14	19	PA	CONTAMINATED BRUSHES	S	.0	.0	.0	.0
			ORGANIC ZINC PRIMER		.0	.0	.0	.0
			ZINC CHROMATE PRIMER		.0	.0	.0	.0
14	21	WP	WASTE SEALS, FILTERS, ETC.	S	.0	.0	.0	.0
14	31	AW	EA 934 EPOXY ADHESIVE	S	.0	.0	.0	.0
			EPOXY RESIN		.0	.0	.0	.0
			ASBESTOS		.0	.0	.0	.0
			FILLERS		.0	.0	.0	.0
			POLYAMIDE		.0	.0	.0	.0
			DIETHYLENETRIAMINE		.0	.0	.0	.0
14	31	CN	BOSTIK PRIMER PAINT CANS	S	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT (1) LITERS	CONTINGENCY VOLUME PER EVENT GAL OR CF
14	31	CN	BOSTIK TOPCOAT PAINT CANS	S	.0	.0	.0	.0
14	31	CN	RUSTOLEUM PRIMER PAINT CANS	S	.0	.0	.0	.0
14	31	CN	RUSTOLEUM TOPCOAT PAINT CANS	S	.0	.0	.0	.0
14	31	CN	MSA-1 EMPTY CONTAINERS	S	.0	.0	.0	.0
14	31	CN	K5NA CONTAINERS	S	.0	.0	.0	.0
14	32	BA	LITHIUM STORAGE BATTERIES	S	.0	.0	.0	.0
14	32	BA	SILVER-ZINC STORAGE BATTERIES	S	.0	.0	.0	.0
14	99	AW	GX-6300 ABLATOR ADHESIVE	S	.0	.0	.0	.0
			RESIN STM L 663		.0	.0	.0	.0
			RESIN STM L 664		.0	.0	.0	.0
			SILICA POWDER		.0	.0	.0	.0
			CARBON POWDER		.0	.0	.0	.0
			CURING AGENT L 663		.0	.0	.0	.0
			CURING AGENT L 664		.0	.0	.0	.0
			HEPTANE		.0	.0	.0	.0
			XYLENE		.0	.0	.0	.0
14	99	CN	SOLVENT CONTAMINATED CONTAINER	S	.0	.0	.0	.0
			SOLVENTS		.0	.0	.0	.0
14	99	CN	PRIMER CONTAMINATED CONTAINERS	S	.0	.0	.0	.0
14	99	CN	ADHESIVE CONTAMINATED CONTAINR	S	.0	.0	.0	.0
14	99	CN	SOLVENT CONTAINERS	S	.0	.0	.0	.0
14	99	CN	POUR FOAM CONTAINERS	S	.0	.0	.0	.0
14	99	CN	ABLATOR CONTAMINATED CONTAINER	S	.0	.0	.0	.0
15	17	EW	WASTEWATER FROM EEW&S	L	.0	.0	.0	.0
15	19	EW	WASTEWATER FROM EEW&S	L	.0	.0	.0	.0
15	19	SW	WASHWATER WITH MEK (CONT.)	L	.0	.0	.0	.0

TABLE A-3 (CONT.) CONTINGENCY GEOGRAPHICAL WASTE GENERATION BY TREATMENT CATEGORY PAGE 16

TRT	STA SET	CAT CODE	WASTE MATERIAL	SOL/ LIQ	CONTINGENCY WEIGHT PER EVENT KILOGRAMS	CONTINGENCY WEIGHT PER EVENT POUNDS	CONTINGENCY VOLUME PER EVENT LITERS(1)	CONTINGENCY VOLUME PER EVENT GAL OR CF
			METHYL ETHYL KETONE		.0	.0	.0	.0
15	21	EW	WASTEWATER FROM EEW&S	L	.0	.0	.0	.0
15	21	SW	WASTEWATER WITH MEK	L	.0	.0	.0	.0
			METHYL ETHYL KETONE		.0	.0	.0	.0
15	23	EW	WASTEWATER FROM EEW&S	L	.0	.0	.0	.0
15	23	SW	SOLVENT WASTEWATER UNSPEC.	L	.0	.0	.0	.0
15	23	SW	CONTAMINATED WASTEWATER	L	.0	.0	.0	.0
			SOLVENTS		.0	.0	.0	.0
			CHLORINATED RUBBER		.0	.0	.0	.0
			ZINC PRIMER		.0	.0	.0	.0
15	31	EW	WASTEWATER FROM EEW&S	L	.0	.0	.0	.0
15	32	EW	WASTEWATER FROM EEW&S	L	.0	.0	.0	.0
15	32	IW	INSULATION-CONTAMINATED WATER	L	.0	.0	.0	.0
			MSA-1 INSULATION		.0	.0	.0	.0
			MTA-2 INSULATION		.0	.0	.0	.0
			K5NA INSULATION		.0	.0	.0	.0
			PR-855 INSULATION		.0	.0	.0	.0
15	33	EW	WASTEWATER FROM EEW&S	L	.0	.0	.0	.0
15	99	SW	SOLVENT CONTAMINATED WATER	L	.0	.0	.0	.0
26(11)	32	CW	SRB FWD SKT CLEANING WASTES	L	.0	.0	.0	.0

1. Metric volume is given in liters for both solids and liquids. To convert the volume of a solid to cubic meters, divide liters by 1,000.

2. Station Set Zero is used for wastes which are generated from space shuttle operations at a place other than a designated station set.

3. Primol 355 is a high-viscosity mineral oil. Its use requires a design decision and Air Force approval. This or another oil or a foam will be used to prevent vaporization of hypergols.

4. Contingency is a once-around abort.

5. Contingency is an acquisition screen test.

6. Contingency is a before-launch abort.

7. Contingency results from emptying seawater out of a retrieved SRB when it is too heavy to lift out of the water.

8. Contingency is the spill of one payload bay kit.

9. Contingency represents one SRB splitting open and spilling its contents. Should this unlikely event occur, it is suspected that propellant will ignite and burn up.

10. Contingency represents one SRB splitting open after recovery.

11. Treatment Category 26 is used for those wastes whose nature is unknown.

CATEGORY CODES

AL	Alkaline cleaning solutions
AW	Adhesive wastes, nonaqueous
BA	Batteries
BW	Bilge wastes
CA	Contaminated air filters
CB	Catalytic bed wash water
CC	Contaminated clothing
CN	Containers
CR	Contaminated rags
CS	Contaminated seawater
CW	Forward skirt cleaning wastes
EW	EEW&S wastewater
FO	Fuel, oil and grease spills and wastes
FS	Fuel spill cleanup
HF	Hydraulic fluids
HS	Hydrazine scrubber effluent
HY	Hydrazine
IN	Insulation wastes, solid
IW	Insulation wastewater (suprawater)
MH	Monomethylhydrazine
NH	Ammonia (NH_3), or water with ammonia
NO	Nitrogen tetroxide (N_2O_4)
OR	Ordnance
OS	Oxidizer spill cleanup
PA	Paint wastes, nonaqueous
PR	Preservative wastes, nonaqueous

CATEGORY CODES (continued)

PS	Propellants, solid
PW	Painting wastewater
QW	Quench water
SB	SRB wash water
SI	SRB initial rinse
SO	Solvent wastes, nonaqueous
SR	Solvent reducer wastes
SW	Solvent wastewater
WP	Worn-out parts
WS	Wastewater treatment sludges

APPENDIX B

RECYCLABLE HAZARDOUS WASTES: CALIFORNIA ADMINISTRATIVE CODE, TITLE 22, DIVISION 4, CHAPTER 30, ARTICLE 12

APPENDIX B

RECYCLABLE HAZARDOUS WASTES: CALIFORNIA ADMINISTRATIVE CODE, TITLE 22, DIVISION 4, CHAPTER 30, ARTICLE 12

66763. RECYCLABLE HAZARDOUS WASTE DISPOSAL STATEMENT

(a) Within 180 days of the disposal of a recyclable hazardous waste of a type listed in Section 66796, the (State Health) Department may request the producer of such waste to provide the Department with a written statement justifying having not recycled the waste. A person requested to provide such a statement shall comply within 30 days of the Department's written request. If the request is made of an entity specified in Section 66160 other than an individual, the statement shall be issued by the responsible management of that entity.

(b) The Department's request for a statement from the waste producer pursuant to subsection (a) above shall cite a special property or component of the waste and a possible use or method of reclamation on the basis of which the Department considers that the waste might feasibly be recycled.

(c) The statement from the waste producer justifying having not recycled a hazardous waste pursuant to subsection (a) above shall include, but need not be limited to, the following:

(1) The general description, source, chemical composition, physical state, and amount of the waste.

(2) The amount of similar waste discarded or recycled during the 365-day period preceding the disposal in question.

(3) An estimate of the amount of similar waste to be generated by the producer in the 365-day period succeeding the disposal in question.

(4) A summary of efforts made to find a use for the waste such as the following:

(A) Use without processing.

(B) Use after processing to remove or modify undesired impurities.

(C) Use as a source of energy by the producer or by another person.

(5) Technologic, economic or other reason for not recycling the waste, taking into account relevant factors which may include any of the following:

(A) The available amount and the storability of the waste.

(B) Chemical, physical, toxicological or other properties of the waste which might affect its recyclability.

(C) The concentration or recoverability of the chemical component, chemical reactivity, fuel value or other attribute cited by the Department pursuant to subsection (b) above which may determine the feasibility of recycling the waste.

(D) The processing required in recycling the waste and the availability and cost of suitable processing technology and facilities.

(E) The marketability of the waste as such or as its reclaimed components in terms of the distance from the waste

source to the point of use or reclamation, the costs of handling and transport, and the current market prices for the individual waste components as pure or technical grade materials.

(d) The statement shall indicate what information contained therein is considered to be a trade secret. The Department shall keep confidential trade secrets contained in any statement submitted to the Department pursuant to this section.

NOTE: Authority cited: Section 25175, Health and Safety Code. Reference: Section 25175, Health and Safety Code.

HISTORY:

1. New Article 12 (Sections 66763 and 66796) filed 5-16-79; effective thirtieth day thereafter (Register 79, No. 19).

66796. LIST OF RECYCLABLE HAZARDOUS WASTE TYPES

(a) Wastes of the types cited on the list of Recyclable Hazardous Wastes in subsection (b) are waste types which the Department finds to be both economically and technologically feasible to recycle.

(b) List of Recyclable Hazardous Waste Types (including examples of potential recycling methods or uses):

(1) Commercial chemical products including unused laboratory grade products (return to manufacturer or supplier or turn over to chemical salvager for resale or resource recovery; sell or barter to another consumer).

(2) Solvents, used or contaminated (reclaim, in-plant or through custom solvent reclaimer, by purification processes of rectification, ion exchange, adsorption, or extraction; or if

combustible, use in-plant or sell for use as energy resource for heating, cooling, or power generation), including:

(A) Halogenated solvents such as trichloroethane, perchloroethylene, methylene dichloride, chloroform, carbon tetrachloride, Freons®;

(B) Oxygenated solvents, such as acetone, methyl ethyl ketone, methanol, ethanol, butanol, ethyl acetate;

(C) Hydrocarbon solvents, such as hexanes, Stoddard, benzene, toluene, xylenes, paint thinner.

(3) Used or unused petroleum products, including motor oils, hydraulic fluids, cutting lubricants, fortified weed oils (turn over to reclaimer of motor oils and other petroleum products for recovery of petroleum components; or use in-plant, or sell for use as energy resource for heating, cooling, or power generation).

(4) Pickling liquor (recover iron salts by concentration, e.g., by solar evaporation of spent liquor).

(5) Unspent acids, such as hydrochloric, hydrofluoric, nitric, phosphoric, sulfuric, in concentrations exceeding 15% (use directly as pickling and etching acids; in neutralization of alkaline process waste streams; or in manufacture of useful salt products, e.g., ammonium salts, calcium fluoride).

(6) Unspent alkalis, including hydroxides and carbonates of sodium, potassium, and calcium, and acetylene sludge (use directly in certain metal finishing operations; in neutralization

of pickling acids and acid process waste streams; in precipitation of heavy metals; or in manufacture of useable products, e.g., calcium oxide, sulfate, fluoride, and chloride).

(7) Unrinsed empty containers of iron or steel used for pesticides or other hazardous chemicals:

(A) Pesticide containers (return to the registrant or, if 30- or 55-gallon size, recondition, pursuant to Section 3143 of Title 3, California Administrative Code; or shred or bale, after removal of pesticide residues by solvent or chemical action or burning, for use as steel scrap).

(B) Hazardous chemical containers (other than pesticide containers return to product supplier or, if 30- or 55-gallon size, recondition; or shred or bale, after removal of chemical residues by solvent or chemical action or burning, for use as steel scrap).

NOTE: Authority cited: Section 25175, Health and Safety Code. Reference: Section 25175, Health and Safety Code.

APPENDIX C

STATE OF CALIFORNIA REGULATIONS GOVERNING LAND DISPOSAL OF HAZARDOUS WASTES

APPENDIX C

STATE OF CALIFORNIA REGULATIONS GOVERNING LAND DISPOSAL OF HAZARDOUS WASTES

The following excerpts from the regulations contained in the "Waste Discharge Requirements for Nonsewerable Waste Discharge to Land; Disposal Site Design and Operation Information" (prepared by the State of California, State Water Resources Control Board, reprinted January 1978) are pertinent to land disposal of hazardous wastes.

PART A - INTRODUCTION

The classification of disposal sites is based on the geologic and hydrologic features of the disposal area and the capability for protection of surface and ground water quality. The categorization of wastes is based upon the threat that the type of waste material presents to water quality.

This document has been developed to describe the additions to the Administrative Code concerning waste disposal to land and to indicate parameters that are considered in formulating waste discharge requirements for waste disposal sites.

PART D - INFORMATION REGARDING DEVELOPMENT OF WASTE DISCHARGE REQUIREMENTS

General Considerations

General Policy--

All liquid and solid waste disposal sites must be situated, designed, and operated to provide protection to the surface and

ground water so as to attain the highest water quality which is reasonable and to prevent nuisance.

Filing Report of Waste Discharge--

Prior to the disposal of waste at a new site or when a material change in the waste discharge is planned (such as at an expanded site or where the waste type is changed), the operator is required by the water code to file a report of waste discharge with the appropriate Regional Board to receive site classification, reclassification, or waste discharge requirements.

Other Permits--

Any site approved to receive hazardous waste must also have a permit to operate the site from the California Department of Health. All sites must be in conformance with the state-approved County Solid Waste Management Plan and must have a Solid Waste Management Board Permit for operation at the site.

California Environmental Quality Act--

Requirements must be considered prior to approval for discharge.

Approval of Local Agencies--

A report of waste discharge, complete in all other aspects, shall be considered incomplete without a certification that all local agencies with jurisdiction have approved the use of the site for the intended purposes.

Filing Fees--

A filing fee is required to be submitted with the report of waste discharge.

Information Provided by Discharger--

Sufficient information must be provided by the discharger to enable evaluation of the disposal operation in relation to conditions in the disposal area, such as local geohydrology and the surface water hydrology required by Section 2551.*

The information submitted by the discharger in the form of a technical report accompanying the report of waste discharge can be summarized as including the following:

a. Discharger's name and address and legal owners' names and addresses.

b. Description of waste materials being received or anticipated to be received at the site, including average monthly quantity in gallons, cubic yards, or tons; types of materials (make special note of the high moisture content materials and specific characteristics of Group I wastes).

c. Area to be used includes a topographical map showing:

   1. Property boundary of the disposal site
   2. Boundary of areas used or to be used for waste disposal.
   3. Location of springs, standing water, and nearby wells.

d. General plan of disposal site operation and sequence of filling operations. A brief description is desirable regarding the manner of waste disposal, i.e., use of

* Unless otherwise indicated, all code sections are from California Administrative Code, Title 23, Chapter 3, Subchapter 15.

ponds or liquid-spreading areas, or landfilling involving daily burial of wastes.

e. Detailed Site Information:

1. Hydrological data for the disposal area. Include a description of surface water drainage provisions, and show calculations for the flooding frequency of streams within or adjacent to the site.

2. Geohydrological information that indicates the relation of the waste disposal area to ground water quality.

3. Locations and depths of excavations of soil borrow and waste disposal areas. Indicate the lowest elevation (USGS datum) proposed for waste placement.

f. Description of facilities and measures to prevent illegal discharge of nonpermissible wastes to the site during and between normal operating periods.

g. Information concerning control measures proposed for drainage, leachate, and gases.

h. Description of anticipated land use after termination of disposal operations.

i. Vegetative cover and other facilities required for the stabilization of disturbed land areas.

Technical details regarding site design and construction specifications will normally be contained in reports submitted by the discharger for approval by the Regional Board Executive Officer. The discharger may be required to provide a statement in writing that he will implement the recommendations contained in a

technical report prepared by his consultant. In cases where the reports offer several alternative solutions, the discharger may be required to submit an itemized listing of the alternatives selected.

The burden of proof that deviations can be made from standard procedures (i.e., the acceptance of certain Group I wastes in Class II-1 sites), and that disposal site criteria are met, must be provided by the discharger. Substantial exploratory investigations may be required to provide such information; the time and expense involved rightly should be borne by the proponent of the disposal operation.

Evaluation Procedures and Applicable Waste Discharge Requirements

Evaluation of the disposal site by the Regional Board and its advisory agencies will result in classification of the disposal areas and determination of the allowable wastes to be received. Waste discharge requirements commonly encompass the following:

a. Delineation of allowable areas of waste placement and limits of depth of waste placement.

b. Control measures to be achieved for wastes, tributary surface drainage (including prevention of inundation), subsurface drainage, rainfall infiltration, and erosion control.

c. Leachate and gas control measures that are necessary.

More than one class of disposal area may be established within a disposal site. This may be necessary because of the varying conditions which may occur within a site (i.e., different

geological conditions, the provision of a barrier in one portion of the site, or different ranges of flooding potential).

Class I Sites--

The criteria for Class I sites are contained in Sections 2510 and 2531. Usable grund water can underlie Class I sites only under unique conditions. Disposal areas overlying usable ground water present problems caused by the unknowns involved in geological conditions, possible unobserved hydraulic continuities between the ground water and the waste disposal area, and the uncertainties associated with Group 1 wastes.

Normally, no runoff or overflow from a Class I site is allowed. All runoff from Group 1 waste disposal must be contained within the disposal area.

Specifications for structures to control lateral waste migration are contained in Section 2531. The construction of such structures may be required to be supervised by a qualified engineer; inspection of the construction will usually be made by the Regional Board's staff. A report of the details of the barrier structure is to be filed with the Regional Board by the discharger.

Surface Water Control--

Sections 2510(d) and 2510(e) require that Class I sites not be subject to inundation or washout; Class II sites must be protected from washout or inundation by a 100-year flood, and Group 2 wastes may not be contacted by surface drainage. Sections 2511(a) and 2511(b) provide additional details.

Construction of a culvert used to carry surface drainage under a Class I or II disposal area is discouraged. If such a location is unavoidable, the culvert must be constructed of materials that will last for the active life of the landfill. They should be resistant to the effects of landfill gases and leachate (acidity, sulfide, and anaerobic conditions), have watertight joints, and be of sufficient strength to withstand the maximum loading of the planned landfill (approximately 1,800 lb/CY including water content). Culverts should be installed in undisturbed soil and not in contact with or through landfills containing Group 2 materials. Trash racks should be installed at culvert inlets to prevent plugging of the culvert.

Disposal areas containing ponded water should be dewatered and maintained in a dry state.

Seepage Control--

Subsurface flow in the form of springs or seepage should be prevented from entering a disposal area comprised of Group 2 wastes. It is preferable to collect and drain the seepage water around the fill. If that method is not possible, then the drainage might be accomplished by constructing a "French drain," comprised of Group 3 wastes or other porous media in the seepage area. An impermeable layer should separate the base of the Group 2 landfill and the drain materials to prevent leachate and carbon dioxide gas from mixing with the seepage.

Addition of Water--

Operators of some refuse disposal sites apply water for compaction, litter control, and fire control purposes. An excessive

amount of water is sometimes applied causing a threat of overloading the absorption capacity of the landfill mass and formation of excess leachate. Water as an aid to compaction has not been proven for landfill construction, although it does have merit for dust control. The use of water for these purposes should be minimized in most instances.

The water balance of a disposal area is dependent on factors such as the following:

a. Absorption capacity of the landfill materials - a factor that is variable because of type of waste or void space in fill materials. Average range: 25 to 40 gallons per cubic yard for general refuse.

b. Amount of water added to the landfill minus evaporation - sources would be direct precipitation, drainage entering the fill, water content of wastes, and water added for dust control or compaction.

c. Amount of water contained in the waste plus rainfall minus evapotranspiration.

Theoretically, the absorption capacity of a general refuse landfill located in arid portions of California can be safely utilized for the disposal of liquids or high moisture content materials. The Regional Board may place restrictions on liquid volumes added to such landfills. As an alternative to the addition of the liquid to landfill materials, consideration should be given to use of separate disposal areas for liquid or high moisture content wastes, such as ponds, pits, trenches, or spreading

and discing, in areas which are not located adjacent to or overlying Group 2 wastes.

Additional details are contained in Section 2532.

Leachate Control--

In most parts of California, the waste discharge requirements for the disposal of Group 2 wastes normally will result in the landfill being kept relatively dry to minimize leachate production and lessen decomposition rates and associated gas production. At disposal areas where facilities have been designed to capture leachate and recirculate it or otherwise treat it, leachate production need not be a critical factor unless leachate collection and treatment facilities become overloaded.

Depths to Ground Water--

Information regarding the highest anticipated elevation of the capillary fringe of the ground water may be obtained from agencies such as the State Department of Water Resources or local water districts. Future changes in hydrologic conditions, such as rises in ground water elevations because of ground water recharge activities, new imported water supplies, or reduced ground water pumping, are considered by the Regional Board when establishing waste discharge requirements.

Monumentation of Boundaries--

The checking of minimum elevations and boundaries of disposal areas requires monumentation of the approved disposal area limits. For sites at which minimum elevation of waste placement or a definite waste disposal area is defined, bench marks or

boundary markers may be required to identify these respective limits.

Gas Control--

At sites where barriers to gas movement exist (natural, wet clay soils or artificial barriers) and where structures are situated along the perimeter of the landfill, methane gas monitoring may be required.

Settlement--

Final settlement of a landfill composed of Group 2 wastes may be in the order of 5 to over 20 percent of the total depth to the landfill. A landfill operation in relatively level terrain should result in construction of a mound having a height above the adjacent land surface which will compensate for later subsidence and settlement. Otherwise, a depression may be formed in the final surface of the site causing ponding of water and increased infiltration into the landfill. Al alternative to this would be the periodic addition of more soil cover material.

Specifying the Methods to Achieve Compliance--

California Water Code Section 13360 allows a Regional Board to prescribe methods for "the installation of riprap, the construction of walls and dikes, and the installation of surface and underground drainage facilities to prevent runoff from entering the disposal area or leakage to underground or surface waters or other reasonable requirements to achieve the above or similar purposes."

Substantial Changes in Site Operation--

Material changes in the waste volume, type, or concentration, or increases in area or depth to be used for waste disposal beyond that specified in the waste discharge requirements require a new report of waste discharge.

PART E - MONITORING OF DISPOSAL SITES

Monitoring programs are established on an individual site basis. The following paragraphs describe basic monitoring measures which may be included.

Predisposal Monitoring

Monitoring of the local ground and surface water, which is considered to be within the influence area of a disposal site, may be required to obtain baseline data which is indicative of original conditions or effects caused by sources unrelated to the disposal site.

Surveillance Items

Routine surveillance of a disposal site normally provides a review of the adequacy of on-site drainage systems and other conditions.

Water Level Records

Records should be maintained of the depth to ground water underlying the disposal areas. These data may be obtained from existing wells if suitable. At critical locations, the installation of piezometers or small-diameter wells at the disposal site may be required.

Measurement of Leachate Volumes

At disposal sites where barriers are utilized for water quality protection, measurements may be required to detect the build-up of leachate levels into the landfill above or behind the barrier.

Seepage Collection

Seepage collection drains and sumps within hydraulic barrier installations should have continuous fluid level-measuring facilities to provide data on the effectiveness of the barrier.

Monitoring Points

Monitoring point locations are selected on the basis of the characteristics of local ground water and surface hydrology and the site design. Generally, upgradient and downgradient samples are desired.

Analyses

Selection of constituents for analysis and evaluation will be related to the type of wastes discharged. Common basic analyses for ground water, and downgradient springs and streams at refuse disposal sites include pH (field test), electrical conductivity or total dissolved solids, chloride, hardness, and total alkalinity. Specialized monitoring which is dependent on the characteristics of the disposal area and the waste materials, may include toxic materials, heavy metals, dissolved CO_2 (field test), iron hydrocarbons, color, BOD, tannins, and lignins. Gas probes for methane and carbon dioxide gas sampling may be necessary in special situations.

Schedule for Submission of Reports

For solid waste disposal sites receiving up to 200 tons of waste per day, monitoring reports are generally required on a quarterly basis. For solid waste disposal sites receiving greater than 200 tons per day, monthly monitoring reports may be required. If special wastes are received at a site, such as high moisture content wastes or Group 1 wastes, items such as the date, type and amount of waste, and the location of place of disposal in the site, may be required to be recorded.

The volume and type of Group 1 waste and the manner and location of disposal are required to be recorded at Class I sites (Section 2534). State Liquid Waste Hauling Reports (or other approved forms) will be used for this purpose. To facilitate the description of the place of waste disposal within the site, an identification system for the individual disposal areas within the site is to be provided (i.e., Area 1 or Pond A) at these sites. Group 1 waste disposal is to be indicated by noting the identification code in the applicable blank in the Disposal Facility portion of the record form.

As disposal operations proceed, the location of filled areas or changes in site operation may be required to be periodically updated on the disposal site maps to indicate as-built conditions.

Earthen Materials

Monitoring reports should include facilities constructed, vegetation cover, and other actions taken to prevent the transport of material from the site.

The specific minimum requirements established for Class I disposal sites are outlined in the following excerpts from PART F - DISCUSSION OF SUBCHAPTER 15 SECTIONS.

ARTICLE 2. CLASSIFICATION OF WASTE DISPOSAL SITES

2510. Class I Disposal Sites

Class I disposal sites are those at which complete protection is provided for all time for the quality of ground and surface waters from all wastes deposited therein and against hazard to public health and wildlife resources.

The following criteria must be met to qualify a site as Class I:

1. 2510(a). Geological conditions are naturally capable of preventing vertical hydraulic continuity between liquids and gases emanating from the water in the site and usable surface or ground waters.
2. 2510(b). Geological conditions are naturally capable of preventing lateral hydraulic continuity between liquids and gases emanating from wastes in the site and usable surface or ground waters, or the disposal area has been modified to achieve such capability.
3. 2510(c). Underlying geological formations which contain rock fractures or fissures of questionable permeability must be permanently sealed to provide a competent barrier to the movement of liquids or gases from the disposal site to usable water.

4. 2510(d). Inundation of disposal areas shall not occur until the site is closed in accordance with requirements of the Regional Board.

5. 2510(e). Disposal areas shall not be subject to washout.

6. 2510(f). Leachate and subsurface flow into the disposal area shall be contained within the site unless other disposition is made in accordance with requirements of the Regional Board.

7. 2510(g). Sites shall not be located over zones of active faulting or where other forms of geological changes would impair the competence of natural features or artificial barriers which prevent continuity with usable waters.

8. 2510(h). Sites made suitable for use by man-made physical barriers shall not be located where improper operation or maintenance of such structures could permit the waste, leachate, or gases to contact usable ground or surface water.

ARTICLE 3. CLASSIFICATION OF WASTES DISCHARGED TO LAND

2520. Group 1 Wastes

Group 1 wastes consist of or contain toxic substances as defined in Section 2500 and substances which could significantly

impair the quality of usable waters. Examples include, but are not limited to, the following:

- 2520(a). Municipal origin:
  - Saline fluids from water or waste treatment and reclamation processes
  - Community incinerator ashes
  - Toxic chemical toilet wastes.
- 2520(b). Industrial origin:
  - Brines from food processing, oil well production, water treatment, industrial processes, and geothermal plants
  - Other toxic or hazardous fluids from industrial operations such as spent cleaning fluids, petroleum fractions, chemicals, acids, alkalies, phenols, and spent washing fluids
  - Substances from which toxic materials can leach, such as process ashes, chemical mixtures, and mine tailings
  - Rotary drilling muds containing toxic materials.
- 2520(c). Agricultural origin:
  - Chemicals such as pesticides or chemical fertilizers
  - Discarded containers of chemicals unless adequately cleansed.
- 2520(d). Other toxic wastes such as compounds of arsenic or mercury or chemical warfare agents.

2521. Group 2 Wastes

Group 2 wastes consist of or contain chemically or biologically decomposable material which does not include toxic substances nor those capable of significantly impairing the quality

of usable waters. Examples include, but are not limited to, the following:

- 2521(a). Municipal and industrial origin:
  - Garbage from handling, preparation, processing, or serving of food or food products
  - Rubbish such as paper, cardboard, tin cans, cloth, glass, etc.
  - Construction and demolition materials such as paper, cardboard, wood, metal, glass, rubber products, roofing paper, and wallpaper
  - Street refuse such as sweepings, dirt, leaves, catch basin cleanings, litter, yard clippings, glass, paper, wood, and metals
  - Dead animals and portions thereof
  - Abandoned vehicles
  - Sewage treatment residue such as solids from screens and grit chambers, dewatered sludge, and septic tank pumpings
  - Water treatment residue such as solid organic matter collected on screens and in settling tanks
  - Ashes from household burning
  - Infectious materials and hospital or laboratory wastes authorized for disposal to land by official agencies charged with control of plant, animal, or human disease
  - Magnesium and other highly flammable or pyrophoric materials.

- 2521(b). Agricultural origin:
  - Plant residues from the production of crops including, but not limited to, stalks, vines, green drops, culls, stubble, hulls, lint, seed, roots, stumps, prunings, and trimmings
  - Manures
  - Dead animals or portions thereof
  - Adequately cleansed pesticide containers.

ARTICLE 4. USE OF SITES

2530. Disposal at Classified Sites

Disposal of solid or liquid wastes shall be only at sites which have been approved by the appropriate Regional Water Quality Control Board consistent with the classification established by this subchapter and for which waste discharge requirements have been prescribed, unless a waiver has been granted in accordance with Section 2540 of this subchapter.

2531. Disposal in Class I Sites

Any wastes may be disposed of in unlimited Class I sites. Wastes disposed of in limited Class I disposal sites shall be subject to waste discharge requirements, which include limits on the type and quantity of material entering the site, the concentration of material in the waste disposed of on the site, and the amount of material present or remaining on the site after evaporation of liquids.

Information concerning the following specific criteria from Section 2510 should be submitted:

a. Describe vertical hydraulic continuity control.

b. Describe lateral hydraulic continuity control.

c. Indicate absence of continuity of rock fractures or fissures.

d. Evaluate surface drainage provisions.

e. Evaluate flooding and washout potential.

f. Evaluate need for any discharge from the disposal area - type and quantity of discharge.

g. Review active faulting potential including subsidence or uplift so that design of containment features is commensurate with the land movement risks.

h. Indicate plans for site operations near barriers.

i. Indicate plans of subsequent use of property (if known).

Setback distances may be required between water control barriers and adjacent property lines and water bodies to enable future corrective measures to be taken if necessary.

The discharger should state the effective permeability he will attain in structures created to prevent lateral waste migration; this should be consistent with the criteria listed in the Section 2510(b) discussion. In such structures, it may be necessary to provide a positive hydraulic barrier constructed of impermeable materials and equipped with a seepage collection drain and sump for return of the seepage upgradient for disposal.

Earthfill structures should be compacted under the direction of a qualified soils engineer. The following are example specifications for an earthfill barrier:

> Material placed in the barrier shall be compacted at 95 percent relative density at optimum moisture content or greater. Control testing shall be performed routinely during material placement to ensure that every lift is compacted properly. Tests in the different lifts shall, so far as possible, be staggered so as not to coincide in a vertical plane and so as to approximate representative coverage of the entire surface area. Where tests reveal that material placement is less than the minimum standard of 1×10^{-8} cm/sec permeability, it shall be removed and be recompacted to the minimum and again tested.

Construction of levees (or dams) may be inspected by the Regional Board staff. A narrative report of conditions encountered during construction should be provided to the Regional Board by the engineering geologist or the soils engineer.

The Regional Board should be furnished copies of as-built plans showing the details of the barrier, including materials of construction, compaction densities, effective permeability, depth to bedrock, grouting, etc. The exact location and physical measurements of compacted earthfill barriers, cutoff walls, and/or hydraulic barriers should be indicated.

The maximum permissible height for storage of liquids behind a barrier may be stipulated. The liquid level buildup at the

upstream face of the barrier and within the seepage collection drain or sump may be required to be monitored.

The face of barriers must be protected from deterioration by erosion or by rodents through placement of riprap or periodic maintenance. The effectiveness of the barrier must be maintained for the active life of the site.

It should be noted that other appropriate agencies may restrict specific wastes received by a Class I site or the manner of operation pursuant to their authority.

2534. Record Maintenance and Inspection

Operators of Class I sites shall maintain at their business address legible records of the volume and type of Group 1 waste received at the site, and the manner and location of disposal. Such records shall be maintained as specified by the State Board for a period of not less than 10 years on forms approved by the State Board. Records shall be available for review by representatives of the State or Regional Board at any time during normal business hours. When disposal operations cease, the records shall be forwarded to the Regional Board.

2535. Completion of Disposal Operations

2535(a)--

Prior to cessation of disposal operations at a waste disposal site, the operator shall submit a technical report to the appropriate Regional Board describing the methods and controls to be used to assure protection of the quality of surface and ground waters of the area during final operations and with any proposed subsequent use of the land. This report shall be prepared by or

under the supervision of a registered engineer or a certified engineering geologist.

2535(b)--

The methods used to close a site and assure continuous protection of the quality of surface and ground water shall comply with waste discharge requirements established by the Regional Board.

The technical report should be furnished 90 days prior to cessation of disposal operations. The report accompanied by a map of the disposal site should describe the following items:

a. The boundaries of areas used for waste disposal.

b. Control of surface drainage flow through the site.

c. Evaluation of the anticipated settlement due to decomposition and consolidation of the wastes.

d. Manner of surface drainage control in waste disposal areas.

e. Thickness of cover and physical properties including permeability, expansion characteristics, and erodibility.

f. Relationship of waste disposal area to underlying ground water quality.

g. Location of ground water monitoring points (Class II site).

h. Erosion control plan.

i. Proposed subsequent use of the land.

Subsequent uses of the land should be evaluated to determine if conditions will be created which may cause a threat to water

quality. Examples of such conditions on filled areas at Class II sites include:

a. Creation of a pond.

b. Growing of irrigated crops.

c. Heavy watering of parks and golf courses.

d. Water mains and sewer lines broken because of settlement problems.

e. Erosion potential.

Inundation or contact of water with past disposal areas utilized for disposal of Group 1 wastes must be prevented, unless it is shown that the wastes have been neutralized or rendered insoluble, and hence do not present a threat to water quality.

2535(c)--

The owner of the waste disposal site shall have a continuing responsibility to assure protection of usable waters from the waste discharge, and from gases and leachate that are caused by infiltration of precipitation or drainage waters into the waste disposal areas or by infiltration of water applied to the waste disposal areas during subsequent use of the property for other purposes.

The owner of the property used for waste disposal is considered to be responsible in assuring protection measures are taken after completion of disposal operations.

ARTICLE 6. IMPLEMENTATION

2550. Waste Discharge Requirements for Waste Disposal Sites

2550(a)--

Persons planning to establish new waste disposal sites or expand existing sites shall notify the appropriate Regional Board of their proposal for the purpose of receiving site classification, reclassification, or waste discharge requirements prior to the disposal of waste at the new or expanded site in accordance with Section 13260, et seq., of the Water Code.

2551. Information Submitted by Discharger

A technical report describing relevant details of disposal site construction and operation that relate to the protection of water quality shall be submitted with the report of waste discharge by the site proponent or operator prior to the establishment of a new waste disposal site, expansion of an existing site, or for continuing operation of an existing site for which requirements have not been prescribed. The report shall include at least the following:

a. Description of the waste materials anticipated to be received.

b. A map showing the boundaries of the disposal site and waste disposal areas.

c. General description of disposal site operations.

d. Detailed hydrological and geological data for the disposal area.

e. Measures proposed for control of drainage, leachate, and gases.

f. Anticipated land use after termination of disposal operations.

2552. Report of Waste Discharge

In addition to the requirements of Section 2205, a report of discharge for a waste disposal site shall contain, or be accompanied by, a certification that all local agencies with jurisdiction have approved use of the site for the intended purposes. Without such certification, reports shall not be accepted for filing pursuant to Section 2206.

APPENDIX D

LIST OF HAZARDOUS WASTE HAULERS REGISTERED WITH CALIFORNIA DEPARTMENT OF HEALTH SERVICES, HAZARDOUS MATERIALS MANAGEMENT SECTION, MAY 1, 1980

List Of

HAZARDOUS WASTE HAULERS

Registered With

- California Department of Health Services
- Hazardous Materials Management Section

May 1, 1980

This is an alphabetical listing of all Registered Hazardous Waste Haulers. The list includes firms which haul-for-hire as well as those which haul their own waste only.

If you are seeking a firm in your area to haul your hazardous waste do the following:

1. Consult the yellow pages of your phone directory for listings under "Industrial Waste" or similar headings.

2. Verify registration of advertised firms using this list.

3. Contract only with firms holding a valid registration (registration expires annually).

If a firm is not listed but claims to be registered, verification can be made by phoning the Department at (916) 322-2337.

213-331-4208 198
A & D DRAIN & PUMP SERVICE
4657 GLEN ARDEN
COVINA CA 91724

213-269-7583 477
A & R VACUUM TRUCK SERVICE
3128 WHITTIER BLVD
LOS ANGELES CA 90023

213-267-5454 213
The A T & S F Railway Co
5200 E Sheila St
Los Angeles CA 90040

805-393-1804 044
A-VAC TRUCKING INC
316 NORRIS RD
OILDALE CA 93308

408-371-2350 238
AARON'S SEPTIC TANK SERVICE
PO BOX 24662
SAN JOSE CA 95154

415-794-7460 271
Abe Oil Inc
8130 Enterprise
Newark CA 94560

415-235-2822 310
Acme Transportation Inc
2832 Giant Rd
San Pablo CA 94806

415-592-7900 895
ADHESIVE ENGINEERING CO
1411 INDUSTRIAL RD
SAN CARLOS CA 94070

213-691-6984 448
HECTOR ALARCON WASTE OIL
1104 E FRANCIS AVE
LA HABRA CA 90631

415-846-3307 489
ALL AMERICAN OIL COMPANY
PO BOX 625
PLEASANTON CA 94566

408-377-0154 810
Allied Pumping
PO Box 774
Saratoga CA 95070

408-246-1332 821
ALVISO INDEPENDENT OIL
PO BOX 184
ALVISO CA 95002

714-425-0282 490
AMERICAN PROCESSING COMPANY INC
2468 VAN NESS
NATIONAL CITY CA 92050

213-921-0433/0434 498
AMERICAN TRI-STAR LIQUID WASTE
DISPOSAL
13858 E ROSECRANS
SANTA FE SPRINGS CA 90670

916-635-8000 354
AMERICAN WASTE CONTAINER
SERVICE INC
11505 DOUGLAS RD
RANCHO CORDOVA CA 95670

213-264-3910 441
AMVAC CHEMICAL CORPORATION
4100 E WASHINGTON BLVD
LOS ANGELES CA 90023

408-279-0900 206
Andrade Trucking
253 Corral Ave
Sunnyvale CA 94086

213-737-7272 22
ANGELUS - HUDSON INC
4833 EXPOSITION BLVD
LOS ANGELES CA 90016

213-912-2388 073
Aquarius Vacuum Service
PO Box 8506
Rowland Heights CA 91748

805-831-1600 132
ARCO OIL & GAS CO
DIV OF ATLANTIC RICHFIELD
PO BOX 147
BAKERSFIELD CA 93302

213-475-4976
ARCO PETROLEUM CORPORATION 077
10880 WILSHIRE BLVD STE 1003
LOS ANGELES CA 90024

213-834-7221
ARCO PETROLEUM PRODUCTS CO 049
DIV OF ATLANTIC RICHFIELD CO
1801 E SEPULVEDA BLVD
CARSON CA 90745

415-472-7161
Arntz Contracting Co ETAL 305
4340 Redwood Hwy, Ste 309
San Rafael CA 94903

213-321-1392
Asbury Oil Co 015
13419 Halldale Ave
Gardena CA 90249

213-638-6601
W W ASBURY OIL SALES & SERVICE 166
1100 W COMPTON BLVD
PO BOX 5569
COMPTON CA 90224

415-796-9333
ASHLAND CHEMICAL COMPANY 264
8600 ENTERPRISE DR
NEWARK CA 94560

707-374-6472
ASTA CONSTRUCTION CO INC 871
39 N FRONT ST
PO BOX 758
RIO VISTA CA 94571

213-341-4745
Atlas Transport Inc 070
PO Box 968
Chatsworth CA 91311

714-298-1610
Aztec Oil 122
6200 Fairmount
PO Box 20783
San Diego CA 92120

707-374-5744
B-C SERVICES INC 221
PO BOX B
RIO VISTA CA 94571

707-894-3224
B C TRANSPORTATION 872
134 N CLOVERDALE BLVD
CLOVERDALE CA 95425

714-657-1478
B & C Industrial Waste Haulers 180
705 Nuevo Rd
Perris CA 92370

805-937-2228
B & H Service Co 282
4705 S Blosser Rd
Santa Maria CA 93454

415-846-3493
B & J TRUCK LINES INC 893
PO BOX 7
PLEASANTON CA 94566

415-489-5864
B & S TRUCKING CO 472
36005 BETTENCOURT
NEWARK CA 94560

213-698-0991
BACHELOR CHEMICAL PROCESSING 865
DIV OMEGA CHEMICAL CORP
12504 E WHITTIER BLVD
WHITTIER CA 90602

805-589-0910
J E BAKER INC 123
PO BOX 1032
BAKERSFIELD CA 93302

805-399-6520, EXT 9196
BAKERSFIELD AG-CHEM 851
RT 1 BOX 858
BAKERSFIELD CA 93308

805-399-9066
D L BANNING TRUCKING 102
2321 CHARLESTON DR
BAKERSFIELD CA 93308

707-838-6664
BARNES SEPTIC SERVICE 294
121 ARATA LANE
WINDSOR CA 95492

805-524-2377 012
BARNETT TRUCKING INC
136 E TELEGRAPH RD
PO BOX 416
FILLMORE CA 93015

714-295-0041 317
Baron-Blakeslee
3596 California St
San Diego CA 92101

213-335-4989 861
BATTLES CESSPOOL SERVICE
217 S WABASH AVE
GLENDORA CA 91740

213-371-3778 286
Bauer Oil Co
4525 Cadison St
Torrance CA 90503

415-332-3646 260
Bay Cities Refuse Service, Inc
2525 Garden Tract Rd
PO Box 277
El Cerrito CA 94530

415-366-6146/369-2812 492
Bayshore Oil Co
44 Flower St
Redwood City CA 94063

805-259-2241 800
BERMITE DIVISION OF WHITTAKER CORP
22116 W SOLEDAD CANYON RD
SAUGUS CA 91350

209-897-3222 858
BERT-HAWKINS & ASSOCIATES
1010 18TH ST
KINGSBURG CA 93631

805-647-2225 273
BEST PUMPING SERVICE
BEST TOILET SERVICE INC
PO BOX 5025
VENTURA CA 93003

714-873-6327 395
BIG PINE TRUCKING COMPANY INC
RT 4 BOX 1
BISHOP CA 93514

916-635-3434 161
Billington Motor & Armature Works
11349 Folsom Blvd
Rancho Cordova CA 95670

209-537-5710 074
RUDY BONZI INC
2650 W HATCH RD
MODESTO CA 95351

415-657-4500 EXT 14 082
BORDEN CHEMICAL COMPANY
DIVISION OF BORDEN INC
41100 BOYCE RD
FREMONT CA 94538

415-432-7280 898
BOURRET TRANSPORTATION
98 GALLEON WAY
PITTSBURG CA 94565

714-623-2544 132
J S BROWER & ASSOCIATES INC
2040 N TOWNE AVE
POMONA CA 91767

213-329-4115 874
Browning-Ferris Industries
Attn: Robert Girat
PO Box 217
Wilmington CA 90748

415-592-2411 397
BUILDERS DEBRIS BOX
DRAWER L
SAN MATEO CA 94402

213-773-0255 290
BULK FREIGHTWAYS
PO BOX 1069
SOUTH GATE CA 90280

213-327-6034 26
HANK BURGENO
229 FRANCISCO
CARSON CA 90745

213-664-4396 018
Louis Burgeno
26247 Ozone Ave
Harbor City CA 90710

213-442-6784
CAL-CHEM CLEANING COMPANY INC 348
2036 MERCED AVE
PO BOX 3531
SOUTH EL MONTE CA 91733

213-795-6811 EXT 2727
CALIFORNIA INSTITUTE OF TECHNOLOGY 285
1201 E CALIFORNIA BLVD
PASADENA CA 91125

209-466-3554
CALIFORNIA TANK LINES INC 491
PO BOX 6245
STOCKTON CA 95206

805-325-0055
CALIFORNIA VACUUM SERVICE 508
3615 GILMORE ST
BAKERSFIELD CA 93308

213-269-7583
CAPRI PUMPING SERVICE 106
5128 WHITTIER BLVD
LOS ANGELES CA 90023

415-799-2420
CARONE BROTHERS 241
WILLOW AVE & HWY 4
RODEO CA 94572

714-825-2591
GEORGE F CASEY CO 071
PO BOX 502
COLTON CA 92324

805-969-4703
CASMALIA DISPOSAL 250
539 SAN YSIDRO RD
PO BOX 5275
SANTA BARBARA CA 93108

213-721-5031
CHACON CHEMICAL CORPORATION 315
2600 YATES AVE
CITY OF COMMERCE CA 90040

213-432-6923
CHAMPLIN PETROLEUM CO 878
420 HENRY FORD AVE
PO BOX 125
WILMINGTON CA 90748

213-432-8461
CHANCELLOR & OGDEN 009
3031 EAST I ST
WILMINGTON CA 90744

805-969-3311
CHANNEL DISPOSAL CO INC 459
1482 E VALLEY RD
PO BOX 5099
SANTA BARBARA CA 93108

213-830-1731
Chemical Carriers Inc 005
IT Corp
336 W Anaheim St
Wilmington CA 90744

213-532-8611
CHEM PRO LABORATORY INC 513
941 W 190TH ST
GARDENA CA 90248

415-235-9300 EXT 309
CHEVRON CHEMICAL COMPANY 225
940 HENSLEY ST
RICHMOND CA 94804

415-894-2851
CHEVRON U S A INC 069
ATTN - MR SEGNAR
575 MARKET ST. PO BOX 7643
SAN FRANCISCO CA 94120

408-866-6528
CHICO DRAIN OIL SERVICE 812
2179 LA MIEL WAY
CAMPBELL CA 95008

714-986-5874
CHINO BASIN MUNICIPAL 283
WATER DIST
PO BOX 967
CUCAMONGA CA 91730

415-785-1995
CHI-ROC SALVAGE 309
1069 INDUSTRIAL PARKWAY W
HAYWARD CA 94544

213-961-6291
CITY OF INDUSTRY DISPOSAL CO INC 175
PO BOX 3423
420 N DEL VALLE ST
CITY OF INDUSTRY CA 91744

714-233-8363 877
CLEANING DYNAMICS CORPORATION
PO BOX 13567
SAN DIEGO CA 92113

415-843-7607 064
Coast Drayage
1920 2nd St
Berkeley CA 94710

805-922-7371 162
COAST VACUUM TRUCK SERVICE INC
1565 C EAST BETTERAVIA RD
SANTA MARIA CA 93454

213-629-2389 834
COLIMAN LAND CLEARING CO
545 S STANFORD AVE
LOS ANGELES CA 90013

209-463-9906 178
Commercial Salvage
2435 E Weber Ave
Stockton CA 95205

805-648-1804 897
Conoco Transportation
290 Maple Ct
Ventura CA 93003

714-279-0586 197
CONSOLIDATED PUMPING SERVICE
8045 RAYTHEON RD
SAN DIEGO CA 92111

213-445-5344 147
CONTAINERIZED CHEMICAL DISPOSAL
PO BOX 1142
MONROVIA CA 91016

916-929-4440 497
CONTINENTAL CHEMICAL CO
2175 ACOMA ST
SACRAMENTO CA 95815

415-228-4007 850
CONTRA COSTA TOP SOIL
4710 BLUM RD
MARTINEZ CA 94553

805-692-3568 141
County Sanitation Co., Inc
PO Box 576
Summerland CA 93067

213-697-8501 075
CRANE'S WASTE OIL
351 EUNICE CIR
LA HABRA CA 90631

213-432-5445 025
CROSBY & OVERTON INC
1620 W 16TH ST
LONG BEACH CA 90813

213-432-5445 024
CROSBY & OVERTON TRANSPORTATION
1620 W 16TH ST
LONG BEACH CA 90813

213-266-3850 164
Custom Plating Corp
3869 Medford St
Los Angeles CA 90063

213-375-6817 321
Frank M Danielson Trucks & Tractors
26643 Whitehorn Dr
Rancho Palos Verdes CA 90274

714-367-3722 837
DAVE'S VAN DYKE PLUMBING
6511 UTAH TRAIL
29 PALMS CA 92277

213-269-6961 293
DAVIS CHEMICAL COMPANY
1550 N BONNIE BEACH PL
LOS ANGELES CA 90063

209-466-5192 451
DELTA CONTAINER CORPORATION
PO BOX 6567
STOCKTON CA 95206

916-666-3676 434
DELTA OILFIELD SERVICES INC
PO BOX 1675
WOODLAND CA 95695

209-466-5192
DELTA PAPER STOCK CO 28
PO BOX 6533
STOCKTON CA 95206

415-228-7557
DELTA TECH SERVICE INC 479
950 HOWE RD
MARTINEZ CA 94553

415-432-3521
Derrigan Inc 268
dba D-M Transportation
PO Box 23243
Pleasant Hill CA 94523

714-343-2143
Dunlap Waste Oil 226
73-391 San Carlos Dr
Thousand Palms CA 92276

415-467-2552
Easley & Breazy Corp 108
411 Tunnel Ave
San Francisco CA 94134

805-648-5123
ECOLOGY CONTROL INC 003
2567 N VENTURA AVE
PO BOX AA
VENTURA CA 93001

714-287-7555
EDCO Disposal Corp 255
6470 Federal Blvd
Lemon Grove CA 92045

213-636-2524
EDGINGTON OIL COMPANY INC 822
2400 E ARTESIA BLVD
LONG BEACH CA 90805

415-233-3063
EIGHT BALL LINE TRUCKING 367
2717 GOODRICK AVE
RICHMOND CA 94804

213-723-1411
A ELLISON CO 840
5619 E RANDOLPH ST
LOS ANGELES CA 90040

805-925-2771
Engel & Gray Inc 228
PO Box B
Santa Maria CA 93456

415-235-1393
ERICKSON TRUCKING INC 019
249 TEWKSBURY AVE
RICHMOND CA 94801

201-267-2560
Esser General Construction 058
1042 Tabor Rd., Rt 53
Morris Plain NJ 07950

707-442-3259
EUREKA OIL & BURNER 860
FOOT OF T ST
EUREKA CA 95501

714-540-1910
EUROPEAN PARTS EXCHANGE INC 899
17152 DAIMLER ST
IRVINE CA 92713

415-758-8070
E C EVANS & SON USED DRUMS 194
16401 SAN PABLO AVE SP 136
SAN PABLO CA 94806

213-830-7662
FALCON DISPOSAL SERVICE 210
3031 EAST I ST
WILMINGTON CA 90744

213-532-9524
FARWEST CORROSION CONTROL COMPANY 403
17311 S MAIN ST
GARDENA CA 90248

714-688-2822
FINDLY CHEMICAL DISPOSAL INC 337
9680 PRIMROSE DR
RIVERSIDE CA 92503

714-571-2999
5-STAR RUBBISH SERVICE 35
8285 BUCKHORN ST
SAN DIEGO CA 92111

213-835-5684 010
FIX & DRAIN VACUUM TRUCK SERVICE
233 EAST D ST
PO BOX 76
WILMINGTON CA 90748

415-676-3294 004
Fortune Landscape Co, Inc
1658 Wilson Ct
Concord CA 94520

415-676-3294 4
Forture Landscape Co., Inc
1658 Wilson Ct
Concord CA 94520

213-636-7107 482
FREIGHT TRAIN TRUCKING INC
PO BOX 817
4904 E COMPTON BLVD
PARAMOUNT CA 90723

209-858-2354 036
FULLERS DISPOSAL SERVICE
365 E LOUISE AVE
LATHROP CA 95330

805-925-4355 078
G & M Vacuum Service
1565 W Betteravia Rd
Santa Maria CA 93454

805-489-7880 847
G N S PETROLEUM
PO BOX 221
ARROYO GRANDE CA 93420

805-642-4034 112
Gallighen, Inc
PO Box 176
Ventura CA 93001

707-433-3830 811
GARDNER'S OIL SERVICE
1170 LIMERICK LANE
HEALDSBURG CA 95448

805-589-0111 885
Gary Drilling Co
PO Box 5218
Bakersfield CA 93388

714-277-8900 EXT 4340 205
GENERAL DYNAMICS CONVAIR DIVISION
PO BOX 80877
MAIL ZONE 85-2505
SAN DIEGO CA 92138

707-987-3305 193
Geothermal Industries Inc
Butts Canyon Rd
PO Box 480
Middletown CA 95461

805-643-2154 011
GETTY OIL COMPANY
PO BOX 811
VENTURA CA 93001

408-279-2029 171
Ginelli Brothers
715 Comstock
Santa Clara CA 95050

714-888-5911 200
GODDARD'S PUMPING SERVICE
25091 5TH ST
SAN BERNARDINO CA 92410

714-877-3383 219
GOLDEN WEST OIL COMPANY
PO BOX 315
BLOOMINGTON CA 92316

213-263-7477 342
Gray Truck Co., Inc
4280 Bandini Blvd
Los Angeles CA 90023

415-235-4810 364
GREAT WESTERN CHEMICAL COMPANY
860 WHARF ST
RICHMOND CA 94804

213-245-9527 372
GROVE SPECIALTIES INC
528 N STATE ST
GLENDALE CA 91203

707-725-4434 399
GRUNERT'S
735 10TH ST
PO BOX 836
FORTUNA CA 95540

415-797-3710
GUARDIAN PACKAGING CORPORATION 159
6590 CENTRAL AVE
NEWARK CA 94560

213-367-8822
ANDY GUMP SANITATION COMPANY 313
15604 ROXFORD ST
SYLMAR CA 91342

415-543-4835
H & H SHIP SERVICE COMPANY 334
193 CHINA BASIN ST
SAN FRANCISCO CA 94107

805-765-2294
HAYTER TRUCKING 128
PO BOX 416
TAFT CA 93268

408-427-3773
HEDRICK DISTRIBUTORS INC 820
210 ENCINAL ST
SANTA CRUZ CA 95060

415-828-4200/447-1001
Hercel Corp 032
10 Trevarno Rd
Livermore CA 94550

805-486-8644
HOBBS DROP BOX SERVICE 885
PO BOX 555
PORT HUENEME CA 93041

714-833-2500
ICN CHEMICAL & RADIOISOTOPE 332
DIVISION
2727 CAMPUS DR
IRVINE CA 92715

213-944-6389
IMPERIAL ANCHOR PALLET INC 220
12246 PARK AVE
SANTA FE SPRINGS CA 90670

714-271-7610
Industrial & Municipal Services Co 124
8660-D Miramar Rd
San Diego CA 92126

213-262-9747
INDUSTRIAL SERVICE COMPANY 027
PO BOX 588
BELL CA 90201

714-833-7530
Inland Specialties Chemicals 187
2082 Michelson, Ste 302
Irvine CA 92715

209-867-3309/3281
L M IPSEN & SONS 086
17845 S CHATEAU-FRESNO AVE
RIVERDALE CA 93656

213-830-1781
IT Transportation Corp 088
Division of IT Corp
217 N Lagoon Ave
Wilmington CA 90744

ITT CONTINENTAL BAKING CO INC 892
PO BOX 911
171 14TH ST
SAN DIEGO CA 92112

805-544-8524
JBL Chemical Co., Inc 137
825 Capitolio Way
San Luis Obispo CA 93401

213-443-0103
J C, INC 139
2221 LOMA ST
SOUTH EL MONTE CA 91733

714-595-8400
JIM'S VACUUM TRUCK SERVICE 138
302 BRIAR CREEK RD
DIAMOND BAR CA 91765

805-765-2048
JOHNSTON VACUUM TANK SERVICE INC 043
PO BOX 306
TAFT CA 93268

415-682-1870
WINTON JONES CONTRACTOR, INC AND/OR 91
CONCORD TRUCK & EQUIPMENT CO
1949 ARNOLD IND. HWY
CONCORD CA 94520

805-968-3551 247
JOSLYN ELECTRONIC SYSTEMS DIVISION
6868 CORTONA DR
GOLETA CA 93017

805-322-5138 134
K-Bar Oilfield Sales & Service
3504 Pierce Rd
Bakersfield CA 93308

415-495-6627 215
Kennedy/Jenks Engineers Inc
Pacific Environmental Laboratory
657 Howard St
San Francisco CA 94105

714-534-8841 155
KEN'S OIL CO INC
11622 MARGIE LANE
PO BOX 1239
GARDEN GROVE CA 92640

805-393-3646 95
Kern Backhoe Service
PO Box 5382
Bakersfield CA 93388

213-869-1919 277
KING PUMPING COMPANY
PO BOX 4083
DOWNEY CA 90241

213-434-2419 143
JIM KNIGHT DRAIN OIL SERVICE
PO BOX 4401
LONG BEACH CA 90804

805-965-5660 350
LEE & NEAL INC
512 E GUTIERREZ ST
PO BOX 477
SANTA BARBARA CA 93102

714-739-2821 848
Leeder Chemicals Inc
16961 Knott Ave
La Mirada CA 90638

213-693-0300 100
LESSNER VACUUM TRUCK SERVICE
12920 ROSE DR
WHITTIER CA 90601

213-767-4424 363
LIQUID WASTE MANAGEMENT
9100 DE GARMO ST
PO BOX 1082
SUN VALLEY CA 91352

213-821-7077 291
LONGSHORE PUMPING CO
4128 GLENCOE AVE
VENICE CA 90291

213-742-7201 301
Los Angeles Unified School Dist
Maintenance Branch
1240 S Naomi Ave
Los Angeles CA 90021

213-267-2304 308
COUNTY OF LOS ANGELES
MECHANICAL DEPT
1100 N EASTERN AVE
LOS ANGELES CA 90063

805-393-1151 101
M P Oil Co., Inc
175 Ray St
Bakersfield CA 93308

213-247-6210 809
M & T CHEMICALS INC
FUNCTIONAL PLASTICS DIV
5121 SAN FERNANDO RD W
LOS ANGELES CA 90039

415-223-6309 368
J JESUS MAGANA
PO BOX 579
SAN PABLO CA 94806

213-989-2262 876
MAIN P.C.B. SUPPLY INC
16260 LINDBERGH ST
VAN NUYS CA 91406

415-689-9288 391
MAJOR MAINTENANCE INC
PO BOX 352
CONCORD CA 94522

415-521-0303 118
Major Salvage Co
3237 Fernside Blvd
Alameda CA 94501

213-323-4815
J L MANTA PLANT SERVICES CO 20
133 W 155TH ST
GARDENA CA 90248

805-963-1852
HARBORG DISPOSAL COMPANY 400
136 N QUARANTINA ST
PO BOX 4127
SANTA BARBARA CA 93103

805-259-8282
MARTIN INDUSTRIAL PUMPING SVC 335
PO BOX 1608
CANYON COUNTRY CA 91351

415-228-4363
MARTINEZ SANITARY SERVICE 807
615 ESCOBAR ST
MARTINEZ CA 94553

213-436-3813
KYLE O MAYES COMPANY INC 013
800 W 15TH ST
LONG BEACH CA 90813

209-935-0851
McKAY TRUCKING COMPANY 021
PO BOX 376
COALINGA CA 93210

213-723-1175
METROPOLITAN WASTE DISPOSAL 333
900 S MAPLE AVE
MONTEBELLO CA 90640

209-659-3941
MEYERS AG CHEM 888
PO BOX 457
FIREBAUGH CA 93622

408-252-4568
MILLER & GIBSON 142
PO BOX R
CUPERTINO CA 95014

415-583-3030
MILPRINT, INC 280
205 SHAW RD
SOUTH SAN FRANCISCO CA 94080

805-525-3331
MILUM TEXTILE SERVICES 081
1150 E MAIN ST
SANTA PAULA CA 93060

714-444-6197
MODERN SEPTIC SERVICE 199
110 FRONT ST
EL CAJON CA 92020

916-545-0675
MODESTO SAND & GRAVEL 801
6137 HAMMETT RD
MODESTO CA 95351

805-763-4141
Bob Morton Construction Inc 324
PO Box M
Taft CA 93268

714-734-8700
Motor Rim & Wheel Service 11?
230 N Sherman
Corona CA 91720

408-297-8088
MOYER CHEMICAL COMPANY 842
PO BOX 945
SAN JOSE CA 95108

707-255-5200
NAPA GARBAGE SERVICE 879
PO BOX 659
NAPA CA 94558

707-255-8771
NAPA VALLEY DISPOSAL SERVICE 880
PO BOX 659
NAPA CA 94558

213-941-5117
NASH SALVAGE INC 189
16211 PLACID DR
WHITTIER CA 90604

213-833-5381
National Metal & Steel Corp 856
PO Box 3406
Terminal Island CA 90731

714-235-1500 832
NAVY PUBLIC WORKS CENTER
SAN DIEGO CA 92136

714-474-7511 209
NELCO OIL REFINING CORP
600 W 12TH ST
NATIONAL CITY CA 92050

805-763-1048 068
Bill Newkirk Trucking Services
1004 Buena Vista
Taft CA 93268

714-635-2309 503
NIETO & SONS TRUCKING
1617 NELLS LANE
PO BOX 8111
ANAHEIM CA 92802

916-473-5533 398
NORTHERN TRUCK SERVICE
PO BOX 746
WILLIAMS CA 95987

213-286-3134 171
W C NOTTINGHAM CO OF SOUTHERN CALIFORNIA
5150 MAXSON RD
EL MONTE CA 91732

714-547-6464 236
W C NOTTINGHAM CO INC
2926 W FIRST ST
SANTA ANA CA 92703

415-465-2911 168
OAKLAND SCAVENGER CO
2601 PERALTA ST
OAKLAND CA 94607

209-858-2511 866
Occidental Chemical Co
PO Box 198
Lathrop CA 95330

714-463-8027 307
LARRY O'HARRA ENTERPRISES
13500 JAMUL DR
JAMUL CA 92035

209-224-4239 862
OIL CONSERVATION SERVICE
3609 N MARKS AVE
FRESNO CA 93711

213-261-0321 227
OIL PROCESS COMPANY
5756 ALBA ST
LOS ANGELES CA 90058

805-831-8181 034
OILFIELDS TRUCKING COMPANY
PO BOX 751
BAKERSFIELD CA 93302

213-334-5117 428
OIL & SOLVENT PROCESS CO
1704 W 1ST ST
AZUSA CA 91702

415-471-6264 297
Orsetti Trucking Service
PO Box 236
Union City CA 94587

602-962-6638 065
Overly's Inc
650 W Southern Ave
Mesa AZ 85202

213-722-3655 368
P J B DISPOSAL CO
604 N 18TH ST
MONTEBELLO CA 90640

213-870-7231 059
PACIFIC COAST DISPOSAL CORP
3324 THATCHER AVE
MARINA DEL REY CA 90291

805-647-1604 245
Pacific Construction & Maintenance Inc
PO Box 4129
Ventura CA 93003

707-544-5729 869
PACIFIC DEBRIS BOX SERVICE
HOPPE & HOHSTEIN INC
PO BOX 1781
SANTA ROSA CA 95401

415-452-1616
PACIFIC INTERMOUNTAIN EXPRESS CO 263
BULK COMMODITIES DIVISION
25 N VIA MONTE
WALNUT CREEK CA 94598

213-518-0031
Pacific Vacuum Truck Co., Inc 251
609 Via Estrada
Palos Verdes Estates CA 90274

805-589-2219
PARRIS VACUUM SERVICE 411
RT 4 BOX 474 H
BAKERSFIELD CA 93307

714-474-6392
PEPPER INDUSTRIES INC 116
7670 OPPORTUNITY RD
PO BOX 11367
SAN DIEGO CA 92111

714-477-9336
Pepper Oil Co Inc 304
829 Hoover Ave
National City CA 92050

916-371-5211
Petroleum Tank Line 279
2600 Rice Ave
West Sacramento CA 95691

805-527-3630
PHARM-ECO LABORATORIES INC 890
2355 CHAIN DR
SIMI VALLEY CA 93065

415-783-1322
PIONEER LIQUID TRANSPORT 396
1356 RUUS LANE
HAYWARD CA 94544

415-432-6262
PITTSBURG DISPOSAL & DEBRIS BOX SVC 439
12 INDUSTRY RD
PO BOX 1307
PITTSBURG CA 94565

415-685-4711
PLEASANT HILL BAY SHORE DISPOSAL 808
441 N BUCHANAN CIR
PACHECO CA 94553

213-549-4570
Post Transportation Co 208
PO Box 1000
Long Beach CA 90801

805-5894320
L W Potter Trucking Co 030
3237 Patton Way
Bakersfield CA 93308

213-437-1284
POWERINE OIL COMPANY 295
910 S WINDHAM AVE
LONG BEACH CA 90802

503-285-4653
POWER MASTER INC 60
225 NE MIDDLEFIELD RD
PORTLAND OR 97211

714-629-9776
QUAKER CHEMICAL CORPORATION 281
10735 KADOTA ST
PO BOX 973
POMONA CA 91769

213-549-1660
Quality Transport Inc 053
2418 E 223rd St
Long Beach CA 90810

209-383-3221
RBJ Transport Inc 262
PO Box 1243
Merced CA 95340

213-757-0128
R & R INDUSTRIAL WASTE HAULERS 111
12618 S MAIN ST
LOS ANGELES CA 90061

213-887-7384
R & S Recycling Co 239
PO Box 1343
Canoga Park CA 91304

714-847-3581
RAINBOW DISPOSAL COMPANY INC 502
17121 NICHOLS
PO BOX 1026
HUNTINGTON BEACH CA 92647

213-775-2625
RAINBOW TRUCKING CO
21119 WILMINGTON AVE
LONG BEACH CA 90810
17

805-763-3090
J N RAY VACUUM SERVICE
415 LUCARD ST
TAFT CA 93268
057

415-329-5519
RAYCHEM CORP
300 CONSTITUTION
MENLO PARK CA 94025
891

805-643-0348
REAGEN'S VACUUM TRUCK SERVICE INC
2457 N VENTURA AVE
PO BOX 289
VENTURA CA 93001
323

602-252-5757
Recycled Energy
Kaibab Industries
2600 S 20th Ave
Phoenix AZ 85009
227

707-542-5632
REDWOOD EMPIRE DEBRIS BOX SERVICE
3400 STANDISH AVE
PO BOX 697
SANTA ROSA CA 95402
884

805-485-7679
REED SANITATION SERVICE INC
275 BEEDY ST
OXNARD CA 93030
229

209-892-6742
Refineries Services
PO Box 606
Patterson CA 95363
827

213-679-1177
REMOVAL INCORPORATED
4046 W COMPTON BLVD
LAWNDALE CA 90260
274

805-937-6681
RICH SAND SERVICE COMPANY
PO BOX 2403
ORCUTT CA 93454
093

415-236-8000
RICHMOND SANITARY SERVICE
205 41ST ST
RICHMOND CA 94805
092

503-285-9111
Riedel International Inc
PO Box 3320
Portland OR 89208
201

602-252-6518
The Rinchem Co
2402 S 15th Ave
Phoenix AZ 85007
344

707-462-8811
Rinehart Oil Inc
PO Box 725
Ukiah CA 95482
272

213-861-1182
ALBERT A RIOS
11849 SUSAN AVE
DOWNEY CA 90241
255

213-864-2953
ROBERT'S LIQUID DISPOSAL
14708 STUDEBAKER RD
NORWALK CA 90650
186

714-622-7647
O A ROBERTS
1435 E GRAND
POMONA CA 91766
329

213-833-1688
Roll A Way Disposal
PO Box 1187
San Pedro CA 90733
243

415-324-1638
ROMIC CHEMICAL CORPORATION
2081 BAY RD
EAST PALO ALTO CA 94303
160

213-944-3800
ROSEMEAD OIL PRODUCTS INC
11017 LOCKPORT PL
SANTA FE SPRINGS CA 90670
839

213-896-2277 38
PETE J ROSSI TRUCKING
I2248 OSBORNE PL
PACOIMA CA 91331

408-422-0055 107
Roto-Rooter
1130 Madison Lane
Salinas CA 93907

916-482-1400 266
ROTO ROOTER SERVICE
2551 ALBATROSS WAY
SACRAMENTO CA 95815

213-435-4823 014
ROUTH TRANSPORTATION
800 W 15TH ST
LONG BEACH CA 90813

213-722-3978 179
RUBBISH HAULERS INC
8520 FISHMAN RD
PICO RIVERA CA 90660

213-424-1416 146
Rutherford Oil Co
PO Box 7485
Long Beach CA 90807

714-822-2236 298
S & H Truck Lines Inc
13990 Valley Blvd
Fontana CA 92335

209-935-2936 218
S & W CONSTRUCTION
PO BOX 1015
800 W ELM ST
COALINGA CA 93210

408-988-1111 150
SAFETY SPECIALISTS INC
3284 E EDWARD AVE
SANTA CLARA CA 95050

213-692-3778 284
San's Waste Oil
5339 Adele Ave
Whittier CA 90601

714-234-2261 426
SAN DIEGO GAS & ELECTRIC CO
ATTN - EQUIPMENT OPERATIONS SUPV.
PO BOX 1831
SAN DIEGO CA 92112

714-427-7700 496
SANI-TAINER INC
PO BOX 967
CHULA VISTA CA 92012

209-368-6676 181
SAN JOAQUIN SULPHUR CO
PO BOX 127
720 N SACRAMENTO ST
LODI CA 95240

805-543-0875 374
SAN LUIS GARBAGE CO INC
970 MONTEREY ST
SAN LUIS OBISPO CA 93401

408-429-3622 149
CITY OF SANTA CRUZ
SANITATION DEPT
809 CENTER ST
SANTA CRUZ CA 95060

213-944-0311 212
SANTA FE ENERGY COMPANY
10737 SHOEMAKER AVE
SANTA FE SPRINGS CA 90670

213-261-2516 252
SAV-WAY DISPOSAL CO
PO BOX 4412
WHITTIER CA 90607

408-371-4333 223
Schatz Enterprises
51 Michael Dr., #3
Campbell CA 95008

714-433-1663 066
J C Schumacher Co
580 Airport Rd
Oceanside CA 92054

714-892-6645 870
SECURITY ENVIRONMENTAL
SYSTEMS INC
12251 INDUSTRY ST
GARDEN GROVE CA 92641

707-425-295 257
Sheldon Oil Co
426 Main St
PO Box 278
Suisun CA 94585

805-648-2751 031
SHELL OIL COMPANY
PO BOX 92047 WORLDWAY CENTER
LOS ANGELES CA 90009

213-767-8234 177
DON SHOWALTER PUMPING
12347 SPRING TRAIL
SAN FERNANDO CA 91342

213-581-3020 005
SHUBIN DISPOSAL SERVICE
PO BOX 588
BELL CA 90201

702-786-7777 881
Sierra Chemical Co
PO Box 12550
Reno NV 89510

805-765-7454 248
Silva's Oilfield Trucking
Rt 1, Box 344A
Taft CA 93268

805-967-3812 239
ELDON H SMITH & SON
4379 MODOC RD
SANTA BARBARA CA 93110

408-422-6473 446
SOILSERV INC
PO BOX 1817
1427 ABBOT ST
SALINAS CA 93902

714-744-2700 435
SOLID WASTES SERVICES INC
PO BOX 688
224 LOS POSAS
SAN MARCOS CA 92069

408-286-6446 232
SOLVENT SERVICE CO
1021 BERRYESSA RD
SAN JOSE CA 95112

415-573-1211 176
Sorgdrager Trucking
205 W 39th Ave
PO Box 5124
San Mateo CA 94402

714-689-3867 253
Larry D Soules
PO Box 671
Norco CA 91760

213-328-1910 852
SOUTH BAY DISPOSAL SERVICE INC
1819 TORRANCE BLVD
TORRANCE CA 90501

408-281-1971 169
South Bay Chemical Co
5432 Century Meadow Ct
San Jose CA 95111

213-698-8056 231
SOUTHERN CA CHEMICAL CO INC
8851 DICE RD
SANTA FE SPRINGS CA 90670

714-549-4178 857
SOUTHERN CA SERVICE STATION ASSN
3400 IRVINE STE 206
NEWPORT BEACH CA 92660

213-864-6465 165
Southland Drain Oil & Vacuum Service
13341 E Imperial Highway
Whittier CA 90605

916-443-3160 824
SPARKS OIL COMPANY
7329 TILDEN WAY
SACRAMENTO CA 95822

805-925-1369 007
SPEED'S OIL TOOL SERVICE INC
PO BOX 816
110 E BETTERAVIA RD
SANTA MARIA CA 93454

415-593-8443 129
SPENCER KELLOGG
952 BRANSTEN RD
PO BOX 1029
SAN CARLOS CA 94070

213-864-1197
OTTO F SPRENGER 863
11507 HALCOURT
NORWALK CA 90650

415-326-6200
SRI INTERNATIONAL 097
HEALTH & SAFETY DEPT
333 RAVENSWOOD AVE
MENLO PARK CA 94025

213-437-0541
Stapleton Co 052
1350 W 12th St
Long Beach CA 90813

714-847-1072
STEVERSON BROTHERS 57
PO BOX 335
HUNTINGTON BEACH CA 92648

714-628-8102
STINKY INC 300
INLAND EMPIRE WASTE CONTROL
5095 STATE ST
ONTARIO CA 91761

213-427-7216
JACK STONE DRAINAGE OIL SERVICE 145
3424 MYRTLE AVE
LONG BEACH CA 90807

714-775-0083/838-5635
The Sump Doctor 230
4080 W First St., Sp 279
Santa Ana CA 92703

714-737-2420
Sunkist Growers, Inc 844
Lemon Products Div
PO Box 1387
Corona CA 91720

714-657-1034
SUNNYEDGE DISPOSAL CO 828
PO BOX 248
2750 N PERRIS BLVD
PERRIS CA 92370

415-467-8411
Sunset Scavenger Co 340
Tunnel Ave & Beatty Rd
San Francisco CA 94134

805-589-9369
SUPER SUCKER VACUUM SERVICE 868
9815 GREENACRES DR
BAKERSFIELD CA 93308

213-587-1217
TALLEY BROTHERS INC 829
2007 LAURA AVE
HUNTINGTON PARK CA 90255

209-683-4242
Talley Transportation Inc 269
179 N Park Dr
Madera CA 93637

415-451-1379
Tank Service Co 275
1281 30th St
Oakland CA 94608

408-637-3731
TELEDYNE McCORMICK SELPH 802
3601 UNION RD
PO BOX 6
HOLLISTER CA 95023

415-228-1515
Telfer Tank Lines Inc 258
PO Box 709
Martinez CA 95453

213-385-0515
TEXACO INC 054
PRODUCING DEPT
PO BOX 3756
LOS ANGELES CA 90051

415-635-9293
Then-Tec 803
7605 Hawley St
Oakland CA 94621

213-592-2837
John Thomas Crane & Trucking Co., Inc 216
18851 Stewart St
Huntington Beach CA 92648

213-436-9211/435-1151
Thums Long Beach Co 887
PO Box 2900
Long Beach CA 90801

415-223-5012 249
TOM'S BARREL COMPANY
3018 GROOM DR
RICHMOND CA 94806

408-663-3801 384
Tom's Septic Tank Service
1128 A Madison Lane
Salinas CA 93907

714-891-4881 437
Travenol Laboratories Inc
12131 Western Ave
Garden Grove CA 92641

707-462-2971 185
City of Ukiah
203 S School St
Ukiah CA 95482

714-387-2501 390
UNION CARBIDE CORPORATION
METALS DIVISION
RT 2
BISHOP CA 93514

805-937-6376 393
UNION OIL COMPANY OF CA
NORTHERN CALIFORNIA DIST
201 S BROADWAY
ORCUTT CA 93454

805-659-7600 29
UNION OIL COMPANY OF CA
SOUTHERN CALIFORNIA DIST
PO BOX 6176
VENTURA CA 93003

408-624-0880 270
UNITED LIQUID WASTE INC
PO BOX 7288
CARMEL CA 93921

213-587-3173 517
UNITED PAPER STOCK CO INC
2465 E 25TH ST
LOS ANGELES CA 90058

213-686-2015 063
UNITED PUMPING SERVICE
2102 N MERCED AVE
SOUTH EL MONTE CA 91733

415-692-6691 264
Universal Engineering
1840 Monument Blvd
Concord CA 94520

213-722-3775 500
Universal Trucking Co
1436 Goodrich Blvd
Los Angeles CA 90022

714-382-3909 045
U S Air Force
63ABG/DEEV
Norton AFB CA 92409

213-326-8787 330
V R CONTAINER
1141 KOLEETA DR
HARBOR CITY CA 90710

213-427-1622 222
V T S Trucking
PO Box 16014
Long Beach CA 90806

805-495-6012 318
VALLEY COMMERCIAL DISPOSAL CO
3161 THOUSAND OAKS BLVD
PO BOX 3366
THOUSAND OAKS CA 91359

408-292-3575 087
Valley Industrial Pumping Inc
1277 N 15th St
San Jose CA 95112

916-865-9668 098
VALLEY ROCK PRODUCTS INC
PO BOX 636
ORLAND CA 95963

805-399-1783 845
VALLEY TREE & CONSTRUCTION
PO BOX 6275
BAKERSFIELD CA 93306

805-925-8788 455
Valley Trucking of Santa Maria
1571 E Betteravia Rd
PO Box 528
Santa Maria CA 93454

805-769-4331
VEL-MARV PETROLEUM CORP 422
PO BOX A
TAFT CA 93268

714-232-7341
VICTOR/CALIFORNIA 246
2205 NEWTON AVE
SAN DIEGO CA 92113

714-823-4278
VISTA METALS CORP 314
13425 WHITTRAM AVE
FONTANA CA 92335

213-427-3109
W-H TANKLINES INC 114
PO BOX 638
WESTMINSTER CA 92683

805-543-5854
WALTER BROTHERS CONSTRUCTION INC 306
PO BOX 809
SAN LUIS OBISPO CA 93406

415-533-4655
WASTE OIL RECOVERY SYSTEMS 843
801 HIGH ST
OAKLAND CA 94601

415-799-4487
WESTERN ASPHALT SERVICE 267
PO BOX 217
RODEO CA 94572

213-334-5526
WESTERN DISPOSAL CO INC 170
1017 W GLADSTONE ST
AZUSA CA 91702

209-674-6741
Western Farm Service 008
Central Valley Division
24778 Avenue 13
Madera CA 93637

805-487-4961
WESTERN FARM SERVICE INC 254
COASTAL DIVISION
PO BOX 1307
OXNARD CA 93032

408-728-1491
Western Farm Service Inc 154
Monterey Bay Division
PO Box 148
Watsonville CA 95076

213-549-7711
Western Fuel Oil Co 156
2100 North Gaffey St
P O Box 1229
San Pedro CA 90733

213-321-2533
WESTERN REFUSE HAULING INC 302
19803 S MAIN ST
CARSON CA 90745

209-935-1316
WESTSIDE WASTE MANAGEMENT 882
125 ALCALDE
PO BOX 991
COALINGA CA 93210

805-393-7110
WITCO CHEMICAL CORP 256
GOLDEN BEAR DIVISION
PO BOX 5446/MANOR ST & NORRIS RD
OILDALE CA 93308

805-238-0412
KARL F WITTSTROM VACUUM 281
TRUCK SERVICE
927 CRESTON RD
PASO ROBLES CA 93446

916-322-2337
CALIFORNIA DEPT OF HEALTH SERVICES 999
714 P ST
SACRAMENTO CA 95814

916-323-0296
Ca Dept of Food & Agriculture 121
3292 Meadowview Rd
Sacramento Ca 95832

APPENDIX E

APPLICATION FOR OPERATING PERMIT FOR FACILITIES RECEIVING HAZARDOUS WASTE

STATE OF CALIFORNIA

REGIONAL WATER QUALITY CONTROL BOARD
DEPARTMENT OF HEALTH SERVICES
SOLID WASTE MANAGEMENT BOARD
DEPARTMENT OF FORESTRY

APPLICATION FOR FACILITY PERMIT/WASTE DISCHARGE

This form is to be used for filing a/an: (check all appropriate)

1. ☐ **REPORT OF WASTE DISCHARGE**
   (pursuant to Division 7 of the State Water Code)
2. ☐ **APPLICATION FOR A HAZARDOUS WASTE FACILITY PERMIT**
   (pursuant to Health and Safety Code Section 25200)
3. ☐ **APPLICATION FOR A SOLID WASTE FACILITIES PERMIT**
   (pursuant to Government Code Section 66796.30)
4. ☐ **APPLICATION FOR A RUBBISH DUMP PERMIT**
   (pursuant to Public Resources Code Sections 4371—4375 and 4438)

FOR OFFICE USE ONLY

Form 200 Rec'd
Fee (RWQCB) ____ (SWMB) ____
Letter to Discharger _____
Report Rec'd _____
Effective Date _____
CDF Notified _____
DOHS No. _____
SWMB No. _____

I. FACILITY

A. NAME OF FACILITY — TELEPHONE # ( )
ADDRESS — ZIP CODE

B. NAME OF LEGAL OWNER OF FACILITY — TELEPHONE # ( )
ADDRESS — ZIP CODE

C. NAME OF BUSINESS OPERATING FACILITY — TELEPHONE # ( )
ADDRESS — ZIP CODE

D. TYPE OF BUSINESS OPERATING FACILITY
☐ Sole Proprietorship ☐ Partnership ☐ Corporation ☐ Government Agency

E. NAME OF OWNER(S) OF BUSINESS OPERATING FACILITY — TELEPHONE # ( )
ADDRESS WHERE LEGAL NOTICE MAY BE SERVED — ZIP CODE

II. REASON FOR FILING

CHECK ALL APPROPRIATE:

- A. ☐ New discharge or facility
- B. ☐ Existing discharge or facility
- C. ☐ Increase in quantity of discharge
- D. ☐ Change in character of discharge
- E. ☐ Change in place or method of disposal
- F. ☐ Change in design or operation
- G. ☐ Change in business operating facility
- H. ☐ Enlargement of existing facility
- I. ☐ Other (explain below)

III. TYPE OF OPERATION

CHECK ALL APPROPRIATE:

- A. ☐ Transfer station
- B. ☐ Solid waste disposal site
- C. ☐ Hazardous waste site
- D. ☐ Sewage treatment
- E. ☐ Industry (on-site disposal facility)
- F. ☐ Industry (discharge to sewer)
- G. ☐ Woodwaste site
- H. ☐ Other (explain below)

IV. TYPE OF WASTE

CHECK ALL APPROPRIATE:

- A. ☐ Sewage, sewage sludge, and/or septic tank pumpings
- B. ☐ Industrial wastes
- C. ☐ Municipal solid wastes
- D. ☐ Hazardous wastes
- E. ☐ Agricultural wastes
- F. ☐ Animal wastes
- G. ☐ Forest product wastes
- H. ☐ Construction/demolition wastes
- I. ☐ Inert materials
- J. ☐ Dead animals
- K. ☐ Tires
- L. ☐ Other (explain below)

V. SITE DESIGN CAPACITY

A. PRESENT POPULATION OR CAPACITY	B. DESIGN POPULATION OR ULTIMATE CAPACITY	C. LIFE EXPECTANCY (YEARS)

VI. QUANTITY OF WASTES

A. PRESENT OR PROPOSED DAILY FLOW (IN MGD):	MAXIMUM	AVERAGE	B. DESIGN FLOW (IN MGD)

C. SOLID WASTE DISPOSAL SITE (IN TONS OR CUBIC YARDS):	DAILY QUANTITY	TOTAL IN PLACE QUANTITY	D. AREA IN WHICH SOIL WILL BE DISTURBED (IN ACRES)	TOTAL SITE AREA

VII. LOCATION OF POINT OF DISPOSAL OR OPERATION

(DESIGN AND ATTACH MAP, SKETCH, OR LOCATION ON U.S.G.S. QUADRANGLE MAP, 7.5 OR 15 MINUTE SERIES.)

LIST DISTANCES OR BEARING AND DISTANCE FROM SECTION CORNER OR QUARTER CORNER, SECTION, TOWNSHIP, RANGE, BASE AND MERIDIAN:

VIII. SOURCE OF WATER SUPPLY (CHECK ALL APPROPRIATE)

A. ☐ MUNICIPAL OR UTILITY SERVICE:

NAME OF WATER PURVEYOR

ADDRESS OF PURVEYOR

B. ☐ INDIVIDUAL (Wells)

C. ☐ SURFACE SUPPLY:

NAME OF STREAM, LAKE, SPRING, ETC. (IF NAMED)

TYPE OF WATER RIGHTS ☐ Riparian ☐ Appropriation

WATER RIGHTS PERMIT OR LICENSE #

IX. ENVIRONMENTAL IMPACT REPORT (EIR)

Has an EIR been prepared for this project? ☐ Yes ☐ No

If "Yes", please enclose a copy.

If "No", will an EIR be prepared? ☐ Yes ☐ No

Will a negative declaration be prepared? ☐ Yes ☐ No

If "Yes", please answer the following:

WHO WILL PREPARE THE NEGATIVE DECLARATION?	APPROX. DATE OF COMPLETION

CERTIFICATION

I hereby certify under penalty of perjury that the information provided in this application and in any attachments is true and accurate to the best of my knowledge.

SIGNATURE OF OWNER OF FACILITY		SIGNATURE OF OPERATOR OF FACILITY	
PRINTED OR TYPED NAME		PRINTED OR TYPED NAME	
TITLE	DATE	TITLE	DATE

LIST TITLES OF ANY ATTACHMENTS:

You will be notified of the correctness of filing fee and submittal of any additional information deemed necessary to complete your Report of Waste Discharge pursuant to Division 7, Section 13260 of the State Water Code, or to complete your permit application pursuant to Government Code Section 66796.30 and Health and Safety Code Section 25200.

STATE OF CALIFORNIA

REGIONAL WATER QUALITY CONTROL BOARD
DEPARTMENT OF HEALTH SERVICES
SOLID WASTE MANAGEMENT BOARD
DEPARTMENT OF FORESTRY

INSTRUCTIONS FOR COMPLETING APPLICATION FOR FACILITY PERMIT/WASTE DISCHARGE

This application form is for a permit (and/or waste discharge requirements) to discharge, receive, or dispose of liquid or solid wastes regulated by the California Regional Water Quality Control Boards (RWQCB), the Department of Health Services (DOHS), the State Solid Waste Management Board (SWMB), or the California Department of Forestry (CDF). This form and the filing fee[1] should be sent to the appropriate agency(s) as indicated below:

FORM USE	APPROPRIATE AGENCY			
	RWQCB	DOHS	SWMB[2]	CDF[3]
Report of Waste Discharge	X			
Application for a Hazardous Waste Facility Permit		X		
Application for a Solid Waste Facilities Permit			X	
Application for a Rubbish Dump Permit				X

If you have any questions on the completion of this form, please contact the appropriate agency for assistance.

For a direct discharge (point source discharge) to surface waters, a different application form is required in place of this Form 200. Please contact the appropriate Regional Water Quality Control Board for a National Pollutant Discharge Elimination System (NPDES) application form to apply for a permit for this type of discharge.

This application for waste disposal provides initial notice of a waste discharge. In most instances, additional information will be required, and should be submitted on 8½" x 11" paper. Complete the enclosed form and return it with any required report[4,5] and the filing fee to each appropriate agency(s). The agency(s) will advise you of any additional information that may be required to complete this application and waste disposal report.

The effective date of the application is the date when all required information and the correct fee are received by the agency(s). You will be notified of this effective date by each agency.

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[1] AMOUNT OF FILING FEES

RWQCB

Use flow or units reported in Item VI (Form WRCB 200) and the appropriate class schedule A, B, B1, B2, B3, or C (attached Filing Fee Schedule).

Make check payable to: STATE WATER RESOURCES CONTROL BOARD and mail, together with report of waste discharge, to the appropriate Regional Board. No report can be accepted without the fee.

SWMB

Local solid waste enforcement agencies shall determine the exact fee. The maximum application fee that can be required is five hundred dollars ($500).

DOHS and CDF

No fee is required.

[2] Check with local or county enforcement agency for specific permit requirements and/or exemptions.

[3] If the site is within an incorporated city or on federal land, a copy need *not* be sent to CDF.

[4] REQUIRED REPORT FOR DOHS: An Operation Plan.

[5] REQUIRED REPORT FOR SWMB:

A "Report of Disposal Site Information" is required to obtain a permit to operate a disposal site.

A "Report of Station Information" is required to obtain a permit to operate a large volume transfer station (greater than 100 cubic yards per operating day).

A "Plan of Operation" is required to obtain a permit to operate a small volume transfer station (less than 100 cubic yards per operating day).

Where there is a significant change in design, operation, operator, or size of facility, details of the changes must be submitted to amend previous report.

See attachments for information to be contained in reports.

I. **FACILITY:** Self-explanatory.

II. **REASON FOR FILING:**

A. New discharge or facility: A discharge or facility that is proposed but does not now exist.

B. Existing discharge or facility: Discharge or facility is currently in operation but does not have waste discharge requirements or a permit.

C. Increase in quantity of discharge: Discharge quantity increased or is proposed to increase above 25% of the quantity set forth in the existing requirements; or less if such an increase, in your opinion, might have a significant impact on the quality of the receiving waters or disposal area. Final determination of whether the reported increase would have a significant effect will be made by the appropriate agency.

D. Change in character of discharge: A material change in characteristics of the waste from existing discharge requirements is defined as follows:

a. The addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new product by an industrial facility resulting in a change in the character of the waste.

b. A change in the type of waste accepted at a disposal facility.

E. Change in place or method of disposal: Change from a land disposal to a direct disposal to water; change in the method of treatment which would significantly alter the waste discharge characteristics; moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area, causing different water quality or nuisance effects.

F. Change in design or operation: A significant change in design or operation from that existing when discharge requirements or other permits were last issued.

G., H., and I.: Self-explanatory.

III. **TYPE OF OPERATION:** Self-explanatory.

IV. **TYPE OF WASTE:**

A. Sewage, sewage sludge, and/or septic tank pumpings: Human or animal origin (not industrial).

B. Industrual wastes: Liquid, solid, gaseous or radioactive waste from any producing, manufacturing, or processing operation.

C. Municipal solid wastes: Residential and commercial refuse, garbage and/or rubbish.

D. Hazardous wastes: Waste or a combination of wastes which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either: (1) Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness. (2) Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

E. Agricultural wastes: Wastes resulting from the production and processing of farm or agricultural products.

F. Animal wastes: Wastes from confined holding or feeding areas.

G. Forest product wastes: Shavings, sawdust, chips, bark, slabs, edgings, wood and other flammable waste material incidental to the processing of wood products.

H. Construction/demolition wastes: Waste building materials, packaging and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings, and other structures.

I. Inert materials: Brick, rock, concrete, soil, silt, clay, glass, asphalt, plastics, plasterboard, rubber, and any other inert materials. (Does not include wood.)

J., K., and L.: Self-explanatory.

V. **SITE DESIGN CAPACTIY:** Self-explanatory.

VI. **QUANTITY OF WASTES:**

A., C., and D.: Self-explanatory.

B. Design flow: Treatment design flow (not maximum hydraulic capacity) when for sewage treatment.

VII. **EXACT LOCATION OF POINT OF DISPOSAL:** Map or sketch should be to a scale adequate to show location precisely. Use of a portion of a U.S.G.S. Quadrangle map is recommended. Map must show proximity of disposal location to populated areas and must indicate all wells and drainage courses within 1,000 feet of any disposal point(s).

VIII. **SOURCE OF WATER SUPPLY** (This is the water that contributes to or transports the waste.):

A. Municipal or utility service: Give name and address of the water purveyor.

B. Individual wells: Those not part of a municipal or utility service.

C. Surface supply:
(1) Name of stream, lake, spring, etc., if named.
(2) Type of water rights: Check appropriate item.
(3) If a state permit or license has been granted, give identification number.

IX. **ENVIRONMENTAL IMPACT REPORT:** Self-explanatory.

APPENDIX F

INSTRUCTIONS FOR PREPARING AN OPERATION PLAN FOR A HAZARDOUS WASTE FACILITY

INSTRUCTIONS FOR PREPARING

AN OPERATION PLAN

FOR A HAZARDOUS WASTE FACILITY

Hazardous Materials Management Section
California State Department of Health Services
744 P Street
Sacramento, CA 95814

Revised
January 1980

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INTRODUCTION

In accordance with Section 66373, Title 22, California Administrative Code, an Operation Plan shall be submitted to the California State Department of Health Services (DHS) by a person who has applied for a Hazardous Waste Facility Permit. Operators of either on-site facilities (facilities situated on the waste producer's property) or off-site facilities must apply for a permit and submit an Operation Plan. Hazardous waste facilities which must have permits include: transfer stations; storage, treatment, and disposal facilities; and hazardous waste resource recovery facilities. On-site facilities which store hazardous wastes for less than 60 days are exempt from the permit requirement.

To a large extent, the Operation Plan will provide the information on which the provisions and compliance requirements of the permit will be based. Consequently, the Plan should present information in sufficient detail to provide a clear understanding of: the characteristics of the site; the physical facilities, equipment, operating procedures, and personnel available; and the provisions for responding appropriately to emergencies and other contingencies. The organization of the Plan should conform insofar as possible to the "Table of Contents" on pages i and ii of this document.

The following instructions have been developed to assist in the preparation of the Operation Plan. Much of the information required in these instructions might have been developed previously in: facility plans and specifications; reports supporting applications for waste discharge requirements, land use

permits, and solid waste facility permits; or in other documents. If this is the case, the appropriate sections of those documents can be made a part of the Plan by referencing the sections and attaching copies to the Plan.

The following instructions have been prepared to cover all operations which might be carried out at a hazardous waste facility. Obviously, the portions of the instructions which do not pertain to the specific facility for which the Plan is being prepared can be disregarded.

OPERATION PLAN

I. FACILITY IDENTIFICATION

The initial section of the Operation Plan should identify: the name, address, and specific location of the facility; the name and address of the operator; and the names of those persons who were responsible for preparing the Plan. This information will ensure that there is no misunderstanding regarding the identity of the specific facility for which the Plan has been prepared and that appropriate contact persons have been identified.

A general statement of the type(s) of waste management activities which takes place at the facility should be included. For example, "...the facility provides for the treatment and disposal of hazardous wastes through the burial of containerized wastes, neutralization and ponding of acid wastes, and landspreading of oily wastes".

Facility Map or Layout. A map or layout of the facility must be submitted as part of the Operation Plan (Section 66376 (a) (6)).*

The map should be drawn to an appropriate scale (e.g., 200 feet to the inch) and present:

- Existing topographical contours of the property;
- Proposed final elevations of the completed facility;
- Legal boundaries for which clear title or lease is held;
- Locations of permanent access and permanent internal roads;
- Location and type of fencing;
- Locations of unloading facilities, treatment facilities, storage facilities, equipment cleaning areas, and disposal areas;
- Locations and descriptions of environmental monitoring stations;

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* Section numbers refer to Hazardous Waste Control Regulations in Chapter 30, Division 4, Title 22, California Administrative Code.

- All land uses and zoning outside of the facility and within one-quarter mile of the perimeter for proposed new facilities if available to the applicant;

- Locations of facilities for control of surface or subsurface drainage, leachate or landfill gases; and

- Locations of power lines, pipelines, and easements through the facility.

II. WASTE CHARACTERIZATION

The Operation Plan for hazardous waste facilities shall include: known or anticipated types, general characteristics, and weight or volume of hazardous wastes received or handled (Section 66376 (a) (1)). Accurate information about the types and volumes of the wastes is essential to evaluating the suitability and capability of the physical facilities, the equipment, the safety provisions, and almost all other aspects of the operation. Consequently, the Plan must identify the amounts and forms of various types of wastes which are managed, or are proposed to be managed, at the facility. For example, if pesticides constitute a major hazardous waste, the Plan should indicate the amounts, general types, and the forms in which pesticide wastes arrive at the facility (e.g., tank truck loads, miscellaneous wastes in drums, unrinsed containers, etc.). Information should be obtained from past operating records, copies of manifests, and any other available sources.

III. MAJOR PHYSICAL FACILITIES

The Operation Plan should contain a description of the major elements which provide for the treatment, storage, disposal, and reclamation of wastes at the facility. The location of these facilities should be shown on the facility map. Emphasis should be given to design features which provide for the safe management of the wastes. For all elements, the Plan should describe the features or controls which are provided to prevent discharges to the environment and to prevent uncontrolled reactions. Whenever appropriate, illustrations or engineering drawings should be provided to enhance the descriptions of the equipment and design features.

A. Storage. The facility map should identify the locations of waste storage areas and the types and quantities of wastes to be stored. The Plan should identify the manner in which each type of waste is to be stored and the anticipated length of time each type is to be stored. The Plan should describe the design features of the storage areas which would contain or prevent any spills of hazardous wastes including:

- Ditches, trenches, or other provisions for containing spills;
- Provisions to prevent percolation of spilled wastes;

- Features of containers, vents, hoods, drain valves, floor drains, or other openings which should prevent the escape of spilled or evaporating wastes.

1. Storage Ponds or Lagoons. The Plan should describe the sizes and number of storage ponds. Information should be provided to ensure that:

    - Ponds are constructed of materials (natural materials or liners) compatible with the ponded wastes;

    - Design of the ponds' natural or artificial liners and their leachate control provisions meet the approval of the appropriate California Regional Water Quality Control Board;

    - Pond designs provide adequate freeboard and minimize bank erosion.

2. Storage Tanks. The Plan should identify the size and number of storage tanks. Information should be provided on storage tank design to ensure that:

    - Tanks are constructed of materials (or protective liners) compatible with the stored wastes;

- Tanks are of sturdy and leakproof construction;

- Tanks containing volatile wastes (true vapor pressure greater than 78 mm of Hg) are not vented directly to the atmosphere and are equipped with vapor control systems as required by the local air pollution control district;

- Storage tanks holding wastes which are incompatible are either sufficiently separated from each other or are otherwise protected to prevent mixing of wastes if the tanks break or leak;

- Tanks are marked to identify their contents.

3. Nonstationary Storage Containers. The Plan should indicate the number of nonstationary containers stored (e.g., bags, bins, bottles, cans, cartons, drums). The design and construction of the container storage area (e.g., size, types of structures, and security) should be described. Information should also be provided to ensure that:

   - Waste containers which are subject to deterioration are protected from the weather; and

   - Waste containers holding wastes which are incompatible are sufficiently separated or protected from each other.

4. Storage of Water-Reactive Wastes. The Plan should describe the design features which provide raintight and waterproof protection for water-reactive wastes at storage facilities.

B. Treatment. The facility map should show the location of major waste-treatment units. The unit processes and capacities should be identified. The types and quantities of hazardous wastes to be treated should be described. The types of treatment processes to be used should also be described. Whenever applicable, the physical and chemical principles underlying the processes should be identified. Information should be provided on treatment unit design to ensure the following:

- The treatment units are designed so that no fugitive emissions or other unregulated discharges result;

- Treatment processes are regulated to avoid uncontrolled violent reactions or undesired reactions;

- All chemicals used to treat hazardous wastes and the sludges and effluents produced by the treatment processes are handled in a manner which prevents spills, fires, or explosions;

- Treatment units are constructed of materials compatible with the chemicals used to treat hazardous wastes and with the wastes themselves.

C. Incineration. Basic information on the type, capacity, and design of each incineration unit should be provided. The types and the physical forms (e.g., solids, liquids, slurries, sludges) to be incinerated should be listed. Information should be provided to ensure that:

- Incinerators are designed, constructed, and operated to minimize uncontrolled violent reactions, explosions, or discharges of hazardous wastes;

- Incinerators are located, designed, operated, and constructed to meet requirements of the local air pollution control district;

- Incinerators used for the destruction of compounds which form hazardous, soluble combustion products are equipped with appropriate control devices or processes;

- Incinerators are able to achieve sufficient retention times and temperatures for effective incineration of hazardous wastes.

D. Disposal. The Plan should describe each method used for hazardous waste disposal at the facility, such as land-spreading areas, solar ponds, injection wells, and containerized disposal cells. Provisions for recording the location of disposal cells for each disposal element should be identified.

1. Landspreading Areas and Disposal Lagoons. The Plan should indicate:

   - Sizes and number of the areas;
   - General operating practices;
   - Types of wastes which are landspread;
   - Features to prevent or control runoff during wet weather.

2. Disposal Wells. Information should be provided on the design of disposal wells, the quantities and types of wastes which are disposed in wells, provisions to prevent mixing of incompatible wastes, well-head safety features, and provisions for well closure and identification. If the disposal well employs refuse and general solid waste as absorbent material, the Plan should indicate:

   - Methods to ensure sufficient absorbent material; and
   - Controls to prevent problems, such as formation of hazardous gases.

3. Containerized-Waste Disposal Cells. The Plan should include:

- Number and location of disposal cells;
- Provisions for ensuring separation of incompatible wastes;
- Types of containerized wastes which are disposed;
- Types of liners or other barriers, if any, used in the disposal cells; and
- Cover and seepage control features.

IV. FACILITY EQUIPMENT AND DEVICES

The Plan should identify the equipment which is used at the facility to manage the hazardous wastes and provide for health protection and safety. The several categories of facility equipment covered in this section should be addressed in the Plan. The physical features of the equipment should be emphasized, although operational controls or practices should be included where appropriate to clarify uses of the equipment which provide for safe operation at the facility.

A. Waste Handling Equipment. The Operation Plan should include a list of equipment which the facility employs to manage the wastes.

This should include a description of dozers, scrapers, trucks, pumps, pipelines, and other major pieces of waste handling equipment. Special safety features (e.g., safety windshields, spark arresters, rollover protection, fresh air supply) should be indicated. Provisions for equipment maintenance and for obtaining back-up equipment should be indicated.

Unloading Equipment. Special equipment must be provided at the facility, if needed, to prevent hazards in unloading containers of hazardous wastes (Section 66525 (e)). The Plan should describe the special equipment, such as lifts, ramps, and lines, which are used to remove containers of hazardous waste from vehicles and to handle them safely. If no such equipment is used, justification for the absence of the equipment should be given. If the equipment is not provided by the facility operator, the Plan should specify how the necessary equipment is provided (e.g., equipment is required to be supplied by haulers).

B. Safety Equipment. The Plan shall describe all safety equipment available at the facility. This should include:

- Telephone or radio for summoning aid;

- Protective clothing and equipment for employee safety including respirators, self-contained breathing apparatus, goggles, boots, etc.;

- Warning or alarm system;

- Readily available safety shower and eyewash;

- First aid supplies.

C. Security. The facility must have necessary warning signs and fences to protect the public, livestock, and wildlife (Section 66525 (h) (1)).

1. Fencing. The Plan should describe and present on the facility map the types and locations of barriers capable of preventing unauthorized entry of persons or animals to the facility. A manproof fence or the equivalent is required for readily accessible sites, whereas lesser security provisions might be appropriate for more isolated sites. The report should indicate provisions for securing all gates or other entrances when an attendant is not on duty. Any special provisions (e.g., 24-hour security personnel, etc.) should be indicated. The size, wording, and location of warning signs should be specified.

2. Warning Signs. Warning signs legible from a distance of 25 feet must be posted on access roads to hazardous waste areas of facilities which are open to the public (Section 66525 (f)).

If the facility is open to the public, the Plan should identify the locations, sizes, and wording of warning signs.

D. Lighting. If the facility is operated during hours of darkness, there should be sufficient lighting to ensure safe, effective supervision of operations (Section 66525 (h) (2)).

The locations and types of lighting equipment should be identified if the facility is open during hours of darkness or if hazardous waste haulers are permitted access to the facility during such hours.

E. Water Supply.

1. On-site Water Supply. If an on-site water supply which is not approved for drinking purposes is used for extinguishing fires, washing equipment, or other purposes at the facility, all faucets and taps connected to that supply shall be labeled with a specifically worded warning written in English and Spanish (Section 66525 (c)).

The Plan should specify on the facility map or by description the location of all faucets and taps where a water supply unapproved for drinking is used, and specify the warning label which has been affixed to them. Any other precautions taken to prevent drinking from an unapproved water supply should be indicated.

2. Protection of Public Water Supply. If a public water supply is used at the facility, the service connection shall be protected from contamination as specified in Section 7064, Title 17, California Administrative Code (Section 66525 (d)).

The Plan must identify the types and locations of devices or facilities which prevent backflow of contaminants into the public water supply.

V. GENERAL OPERATING PROCEDURES

The Operation Plan must provide: A general description of the operational procedures to be used at the facility which will ensure compliance with the Hazardous Waste Control Regulations (Section 66376 (a) (3)); a description of procedures for receiving and identifying hazardous wastes, for deployment of qualified personnel, for supervision of handling and disposal of hazardous wastes (Section 66376 (a) (4)), and for closure of the facility if closure is expected within five years (Section 66376 (a) (5)). Whenever applicable, illustrations should be included to show the sequences and procedures used to handle and dispose of hazardous wastes.

The following operational procedures should be specifically addressed:

A. Receipt and Identification of Hazardous Wastes. The Operation Plan must describe the procedures used at the facility for receiving

and identifying hazardous wastes. Considerations to be addressed include:

- Procedures to ensure that properly completed copies of manifests (California Liquid Waste Hauler Records) are obtained from hazardous waste haulers.

- Procedures for field sampling and testing: (a) to determine that each hazardous waste accepted is one which may be received at the facility; (b) to identify potential incompatibilities of incoming hazardous wastes; and (c) to indicate proper disposal procedures and locations in order to ensure the safe and orderly handling and disposal of the wastes.

- Procedures to ensure the presence of an attendant competent to supervise all activities during operating hours at the facility if it is open to the public.

B. Control of Wastes at the Facility. This section of the Plan should describe the procedures rather than the design elements of the facility which will:

- Prevent discharge of hazardous wastes outside designated areas of the facility (e.g., procedures for unloading wastes to ensure discharge of those wastes within the proper areas, instructions to haulers regarding disposal methods, supervision of waste handling, etc.);

- Prevent movement of discharged wastes outside of designated areas of the facility (e.g., loading limits for ponds and disposal pits, maintenance of dikes, routine inspections of storage and disposal facilities, proper covering of buried waste, erosion control, etc.);

- Prevent exposure of a person to, or contamination of a person with, hazardous wastes (e.g., procedures for use of protective clothing and devices, maintenance of wash facilities) (Sections 66530 (e) and 66530 (m));

- Prevent blowing of hazardous wastes (e.g., covering or wetting of powdered wastes); and

- Prevent production of hazardous gases, mists, or vapors (e.g., limitations on types of wastes deposited in ponds or open disposal areas).

The Plan should describe the procedures used and precautions taken for the handling and disposal of containers holding hazardous wastes to ensure that the containers do not rupture or leak (Section 66530 (h)), or cause fires, contamination of persons, or discharges of hazardous wastes. If containers are opened or emptied at the facility, the Plan should state the restrictions (e.g., the practice is limited to: opening severely damaged containers and transferring the wastes to sound containers,

opening and emptying containers of waste intended for treatment, or opening containers for necessary sampling of wastes, etc.). The procedure used for the burial of containers at the facility should be described, indicating procedures to avoid rupture of the containers or leakage of their contents (e.g., care taken in unloading, setting containers in place, placing cover, etc.). Provision of separate disposal areas for burial of containers holding incompatible wastes should be indicated.

The Plan should describe the handling and disposition of empty containers contaminated with hazardous materials (e.g., burial, incineration, rinsing and recycling, or other practices (Section 66530 (i)).

The Plan should describe procedures carried out at the facility to decontaminate equipment which might be contaminated with hazardous waste prior to being serviced or used in a nonhazardous waste area. The methods of collection and disposal of contaminated wash water should be indicated (Section 66530 (n)).

The Plan should describe general operating procedures to minimize the chance of fire or explosion at the facility (e.g., use of separate facilities for incompatible wastes, prohibition of smoking, and other precautions).

C. Facility Closure. If closure of the facility is expected within five years, the Plan must describe the procedures planned for

closure (Section 66376 (a) (5)) which will ensure that the hazardous wastes deposited at the facility will not result in a hazard to health, domestic livestock, or wildlife. The procedures should include controls on future uses of the facility and provisions for proper closure (e.g., use of markers, remedial actions, monitoring, and any other activities which are necessary for the safe closure of the facility).

VI. PERSONNEL

The Operation Plan must describe the deployment of qualified personnel who supervise the handling and disposal of hazardous waste. The description should be sufficiently detailed to evaluate compliance with the following regulations regarding personnel.

A. Adequate Staff. The operator shall provide a sufficient number of qualified personnel to carry out all appropriate functions at the facility (Section 66520 (a)).

B. Training. One person should be trained and qualified to conduct field tests of wastes for pH and flammability when appropriate (Section 66520 (b)).

The Plan should describe the training provided and indicate that a qualified person is available at the facility to conduct the appropriate training.

C. Supervision. There shall be adequate supervision of the facility to ensure that the operations conducted comply with all applicable laws and regulations (Section 66520 (c)).

The Plan should indicate the provisions for supervision at the facility and for advising DHS and local fire authorities of the names of supervisory personnel at the facility and of the addresses and telephone numbers where the personnel can be contacted.

VII. CONTINGENCY PLAN

The Operation Plan should include a contingency plan which sets forth the following:

- Actions to be taken when an accident or accidental discharge of hazardous wastes occurs;

- Equipment and manpower available for correcting effects of accidents; and

- Emergency procedures for recovering and disposing of spilled hazardous waste, for evacuation of employees, and for summoning appropriate emergency services (Section 66376 (a) (7)).

The Plan should list all persons assigned primary responsibility for coordinating emergency response measures. The means for obtaining

emergency assistance of fire, police, and medical services should be specified. The Plan should indicate that those persons who are responsible for activities set forth in the contingency plan are thoroughly familiar with: the hazardous wastes handled at the facility; the type, number, and location of emergency response resources; the general response procedures; and the details of the contingency plan. Also, the distribution of the contingency plan should be indicated.

VIII. ENVIRONMENTAL CONTROL PERMITS

Several permits which include provisions for environmental protection are generally required during the establishment of a hazardous waste facility. These include:

- Conditional land use permit;
- Regional or local air pollution control district requirements; and
- Regional Water Quality Control Board waste discharge requirements.

These permits should be identified in the Operation Plan. A permit for the facility cannot be issued by DHS unless the Regional Water Quality Control Board has established waste discharge requirements or has granted a waiver of those requirements (Section 66379 (c)).
The technical report of information developed for the Regional Water Quality Control Board should provide a substantial portion of the

information for the Plan. This information may be submitted in lieu of a separate write-up for the pertinent portions of the Plan.

IX. RECORDS AND REPORTS

Adequate records and reports are required to document that procedures conducted at the facility have complied with the Hazardous Waste Control Regulations. The Operation Plan should indicate that the following records required by the regulations are maintained and/or submitted to DHS by the operator of the facility:

A. Information (names, addresses, and telephone numbers) regarding the waste producer, hauler, processor, and disposal site operator for each load of hazardous wastes at the facility (Section 66545 (a) (1)).

B. Information (source, identity, composition, volume, physical state, type of container, and hazardous properties) about each load of hazardous wastes received (Section 66545 (a) (2));

C. The processing or disposal method used for each load of hazardous waste received (Section 66545 (a) (3));

D. The date that each load of hazardous waste was received for storage (Section 66545 (a) (4)).

(The records specified in Items A-D of Section IX (above) should be retained at the facility for one year. Copies of completed manifests may serve as the required records.)

E. Monthly reports submitted to DHS (by operators of off-site hazardous waste facilities) consisting of the following:

1. The amount of state hazardous waste disposal fees due and payable (Section 66550 (a) (1));

2. Legible copies of manifests for each load of hazardous wastes received and a summary report of the quantities of such wastes received (Section 66550 (a) (2)); and

3. The identity, source, chemical composition, weight or volume, physical state, hazardous properties, and method used to dispose of each waste received by pipeline (Section 66550 (a) (3)).

F. Monthly reports submitted to DHS (by operators of on-site hazardous waste facilities) consisting of the following:

1. A record of all hazardous wastes disposed of during the month specifying the amount, type, source, chemical composition, physical state, type of container, and hazardous properties of the wastes and the methods used for disposal of the wastes; and

2. A monthly report of state hazardous waste disposal fees due and payable to DHS.

G. Reports of accidents (submitted to DHS within 24 hours after occurrence) which could result in a hazard to public health and safety, domestic livestock or wildlife, or result in a discharge of hazardous waste outside of an area designated in the Plan.

[HMMS-3]

APPENDIX G

REGULATIONS CONCERNING IDENTIFICATION, PACKAGING, AND SHIPMENT OF HAZARDOUS MATERIALS; EXCERPTS FROM CFR-TITLE 49, TRANSPORTATION PARTS 171, 172, 173, AND 178

SUBCHAPTER C—HAZARDOUS MATERIALS REGULATIONS

PARTS 110–170 [RESERVED]

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

Sec.

AUTHORITY: 49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e), unless otherwise noted.

EDITORIAL NOTE: Incorporation by reference provisions approved by the Director of the Federal Register June 30, 1977, and a copy of the incorporated material filed in the Federal Register library.

EFFECTIVE DATE NOTE: At 43 FR 48643, Oct. 19, 1978, amendments were made to this Part, effective Oct. 19, 1978. At 43 FR 51020, Nov. 2, 1978, the effective date was corrected to Sept. 30, 1978.

§ 171.1 Purpose and scope.

This subchapter prescribes the requirements of the Department of Transportation governing the transportation of hazardous materials in commerce.

[Amdt. 171-32, 41 FR 15993, Apr. 15, 1976]

§ 171.2 General transportation requirements.

(a) Except as provided in § 171.12, no person may offer or accept a hazardous material for transportation in commerce within the United States unless that material is properly classed, described, packaged, marked, labeled, and in the condition for shipment as required by this subchapter.

(b) Except as provided in § 171.12, no person may transport a hazardous material in commerce within the United States unless that material is handled and transported in accordance with this subchapter.

(c) No person may represent, mark, certify, or sell a packaging or container as meeting the requirements of this subchapter governing the use of that packaging or container in the transportation in commerce of a hazardous material unless the packaging or container is manufactured, fabricated, marked, maintained, reconditioned, or repaired, as the case may be, in accordance with this subchapter.

[Amdt. 171-32, 41 FR 15993, Apr. 15, 1976, as amended by Amdt. 171-34, 41 FR 38179, Sept. 9, 1976]

§ 171.3 [Reserved]

§ 171.4 Changes in specifications for tank cars.

(a) See § 179.4 of this subchapter.

[31 FR 9068, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 171-42, 43 FR 48643, Oct. 19, 1978]

§ 171.5 Procedure covering tank car construction.

(a) See § 179.3 of this subchapter.

[Order 71, 31 FR 9068, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 171-42, 43 FR 48643, Oct. 19, 1978]

§ 171.6 [Reserved]

§ 171.7 Matter incorporated by reference.

(a) There is incorporated by reference in Parts 170-189 of this subchapter all matter referred to that is not specifically set forth. These materials are hereby made a part of the regulations in Parts 170-189 of this subchapter. Unless the reference provides otherwise, matter subject to change is incorporated only as it is in effect on the date of issuance of the regulation referring to that matter.

(b) All incorporated matter is available for inspection in the Dockets Branch, Room 6500 of the Trans Point Building, 2100 Second Street SW., Washington, D.C. 20590.

(c) Matter incorporated by reference is available for distribution as follows:

(1) ASME: American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017.

(2) American National Standard: American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

(3) CGA: Compressed Gas Association, Inc., 500 Fifth Avenue, New York, N.Y. 10036.

(4) Bureau of Explosives: Bureau of Explosives, Association of American Railroads, American Railroads Building, 1920 L Street NW., Washington, D.C. 20036.

(5) AAR: Association of American Railroads, 59 East Van Buren Street, Chicago, Ill. 60605.

(6) ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.

(7) API: American Petroleum Institute, 1801 K Street NW., Washington, DC 20006.

(8) AISI: American Iron and Steel Institute, 1000 16th Street NW., Washington, D.C. 20036.

(9) The Chlorine Institute, 342 Madison Avenue, New York, N.Y. 10017.

(10) MCA: Manufacturing Chemists' Association, Inc., 1825 Connecticut Avenue, NW., Washington, D.C. 20009.

(11) NFPA: National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110.

(12) Aluminum Association: The Aluminum Association, 420 Lexington Avenue, New York, N.Y. 10017.

(13) NACE: National Association of Corrosion Engineers, 2400 West Loop South, Houston, TX 77027.

(14) IME: Institute of Makers of Explosives, 420 Lexington Avenue, New York, NY 10017.

(15) IAEA: International Atomic Energy Agency, Karnter Ring 11, Post Office Box 590, A-1011, Vienna, Austria (IAEA publications may be purchased in the United States from: Unipub, Inc., Post Office Box 433, New York, NY 10016).

(16) USAEC: U.S. Atomic Energy Commission, Washington, D.C. 20545. Regulations of the USAEC are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Other publications by the USAEC may be obtained from the National Technical Information Center, U.S. Department of Commerce, Springfield, Va. 22151.

(17) Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(18) National Wooden Box Association, Post Office Box 1010, Cumberland, Md. 21502.

(19) TFI: The Fertilizer Institute, 1015 18th Street NW., Washington, D.C. 20036.

(20) AWWA: American Water Works Association, 2 Park Avenue, New York, NY 10016.

(21) AWS: American Welding Society, 345 East 47th Street, New York, NY 10016.

(22) USDC: U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22151.

(23) Inter-governmental Maritime Consultative Organization, 101-104 Piccadilly, London, W1V OAE, England.

(24) Uniform Classification Committee, 222 South Riverside Plaza, Chicago, Ill. 60606.

(25) USERDA: United States Energy Research and Development Administration, Washington, D.C. 20545.

(26) USNRC: United States Nuclear Regulatory Commission, Washington, D.C. 20555.

(d) The full title and application of the matter incorporated by reference in Parts 170-189 of this chapter are as follows:

(1) ASME Code means sections VIII (Division 1) and IX of the 1974 edition of the "American Society of Mechanical Engineers Boiler and Pressure Vessel Code," and addenda thereto through June 30, 1976.

(2) AAR Specifications for Tank Cars means the 1970 edition of the

"Association of American Railroads Specification for Tank Cars".

(3) Compressed Gas Association:

(i) CGA Pamphlet C-3 is titled, "Standards for Welding and Brazing on Thin Walled Containers," 1968 edition;

(ii) CGA Pamphlet C-6 is titled, "Standards for Visual Inspection of Compressed Gas Cylinders," 1968 edition;

(iii) Compressed Gas Association pamphlet C-7, Appendix A is titled, "A Guide for the Precautionary Markings for Compressed Gas Containers", dated May 15, 1971, Addenda issued January 1976.

(iv) CGA Pamphlet C-6 is titled, "Standard for Requalification of DOT-3HT Cylinders," 1972 edition.

(v) CGA Pamphlet S-1.2 is titled, "Safety Relief Device Standards Part 2—Cargo and Portable Tanks for Compressed Gases," 1966 edition.

(4) American National Standards:

(i) American National Standard B9.1, is titled, "Safety Code for Mechanical Refrigeration," 1964 edition.

(ii) American National Standard B16.5 is titled, "Steel Pipe Flanges and Fittings," 1968 edition.

(iii) American National Standard N14.1 is titled, "Packaging of Uranium Hexafluoride for Transport," 1971 edition.

(5) American Society for Testing and Materials:

(i) ASTM D1310 is titled, "Standard Method of Test for Flash Point of Volatile Flammable Materials By Tag Open-Cup Apparatus," 1967 edition;

(ii) ASTM D323 is titled, "Test for Vapor Pressure of Petroleum Products (Reid Method)," 1958(68) edition.

(iii) ASTM D1056 is titled, "Sponge and Expanded Cellular Rubber Products, Spec. and Tests for," 1968 edition.

(iv) ASTM G 23-69[1] is titled, "Standard Recommended Practice for Operating Light- and Water-Exposure Apparatus (Carbon-Arc Type) for Exposure of Nonmetallic Materials," 1969 edition (reapproved 1975).

(v) ASTM G 26-70[1] is titled, "Standard Recommended Practice for Operating Light- and Water-Exposure Apparatus (Xenon-Arc Type) for Exposure of Nonmetallic Materials," 1970 edition.

(vi) ASTM D-638[1] is titled, "Test for Tensile Strength of Plastics", 1976 edition.

(vii) ASTM D-1505[1] is titled, "Test for Density of Plastics by the Density Gradient Technique", 1968 edition.

(6) NFPA Pamphlet No. 58 is titled, "Standard for the Storage and Handling of Liquefied Petroleum Gases," 1972 edition.

(7) Bureau of Explosives, Association of American Railroads:

(i) Bureau of Explosives Pamphlet No. 6 is titled, "Illustrating Methods for Loading and Bracing Carload and Less Than Carload Shipments of Explosives and Other Dangerous Articles," 1962 edition.

(ii) Bureau of Explosives Pamphlet No. 6A (includes appendix No. 1, October 1944, and appendix No. 2, December 1945) is titled, "Illustrating Methods for Loading and Bracing Carload and Less Than Carload Shipments of Loaded Projectiles, Loaded Bombs, Etc.," 1943 edition.

(iii) Bureau of Explosives Pamphlet No. 6C is titled, "Illustrating Methods for Loading and Bracing Trailers and Less-Than Trailer Shipments of Explosives and Other Dangerous Articles Via Trailer-on-Flat-Car (TOFC) or Container-on-Flat-Car (COFC)," September 1968.

(iv) Bureau of Explosives Pamphlets 1 and 2 titled, "Emergency Handling of Hazardous Materials in Surface Transportation," June 1973.

(8) NACE Standard TM-01-69 is titled, "Test Method Laboratory Corrosion Testing of Metals for the Process Industries," 1969 edition.

(9) IME Standard is titled, "IME Standard for the Safe Transportation of Electric Blasting Caps in the Same Vehicle With Other Explosives," dated November 5, 1971 (IME Safety Library Publication No. 22).

(10) IAEA "Regulations for the Safe Transport of Radioactive Materials", 1967 Edition and 1973 Revised Edison, Safety Series, No. 6.

(11) United States Atomic Energy Commission (USAEC):

(i) Title 10, Code of Federal Regulations, Part 71 is titled, "Packaging of Radioactive Materials for Transport and Transportation of Radioactive Materials Under Certain Conditions."

(12) U.S. Department of Commerce, National Bureau of Standards Handbook H28 (1957)—Part II is titled, "Screw-Thread Standards for Federal Services 1957," December 1966 edition.

(13) National Wooden Box Association's Specification 1-1B is titled "Specifications for Nailed Wooden and Lock Corner Boxes for Industrial Use," May 1958. Amended in part October 1961.

(14) American Water Works Association (AWWA) Standard C207-55 is titled, "AWWA Standard for Steel Pipe Flanges," 1955 edition.

(15) American Welding Society (AWS):

(i) AWS Code B-3.0 is titled, "Standard Qualification Procedure," 1972 edition.

(ii) AWS Code D-1.0 is titled, "Code for Welding in Building Construction," 1966 edition.

(16) USDC, CAPE-1662, one of the series of "Civilian Applications Program Engineering Drawings" which is a package of information including drawings and bills of material, describing phenolic-foam insulated, protective overpacks.

(i) USDC, USAEC Material and Equipment Specification No. SP-9, is titled, "Fire Resistant Phenolic Foam."

(ii) USDC, ORO-651 is titled, "Uranium Hexafluoride Handling Procedures and Container Criteria," Revision 3, 1972 edition.

(17) "International Maritime Dangerous Goods Code," volumes I, II, III, and IV, 1977 edition.

(18) "Uniform Freight Classification 11."

(19) General Services Administration, Federal Specification RR-C-901b is titled "Cylinders, Compressed Gas: With Valve or Plug and Cap; ICC 3AA," August 1, 1967.

(c) Matters referenced by footnote are included as part of the regulations of this subchapter.

[Amdt. 171-4, 34 FR 18247, Nov. 14, 1969]

NOTE: For amendments to § 171.7 see list of CFR sections in back of this volume.

§ 171.8 Definitions and abbreviations.

In this subchapter,

"Approved" means approval issued or recognized by the Department unless otherwise specifically indicated in this subchapter.

"Away from" See § 176.83.

"Barge" means a non-selfpropelled vessel.

"Bottle" means a container having a neck of relatively smaller cross section than the body and an opening capable of holding a closure for retention of the contents.

"Break-bulk" means packages of hazardous materials that are handled individually, palletized, or unitized for purposes of transportation as opposed to bulk and containerized freight.

"Bureau of Explosives" means the Bureau of Explosives (B of E) of the Association of American Railroads.

"C" means Celsius or Centigrade.

"Captain of the Port" means the Officer of the Coast Guard, under the command of a District Commander, so designated by the Commandant for the purpose of giving immediate direction to Coast Guard law enforcement activities within his assigned area or, with respect to remaining areas in his District not assigned to officers designated by the Commandant, the District Commander.

"Carfloat" means a vessel that operates on a short run on an irregular basis and serves one or more points in a port area as an extension of a rail line or highway over water, and does not operate in ocean, coastwise, or ferry service.

"Cargo-only aircraft" means an aircraft that is used to transport cargo and is not engaged in carrying passengers.

"Cargo tank" means any tank permanently attached to or forming a part of any motor vehicle or any bulk liquid or compressed gas packaging not permanently attached to any motor vehicle which by reason of its

[1]Available from American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103.

size, construction, or attachment to a motor vehicle, is loaded or unloaded without being removed from the motor vehicle. Any packaging fabricated under specifications for cylinders is not a cargo tank.

"Cargo vessel" means: (1) Any vessel other than a passenger vessel; and

(2) Any ferry being operated under authority of a change of character certificate issued by a Coast Guard Officer-in-Charge, Marine Inspection.

"Carrier" means a person engaged in the transportation of passengers or property by:

(1) Land or water, as a common, contract, or private carrier, or

(2) Civil aircraft.

"CC" means closed-cup.

"Character of vessel" means the type of service in which the vessel is engaged at the time of carriage of a hazardous material.

"Civil aircraft" means aircraft other than public aircraft.

"Class A explosives" See § 173.53.

"Class B explosives" See § 173.88.

"Class C explosives" See § 173.100.

"COFC" means container-on-flat-car.

"Combustible liquid" See § 173.115.

"Compressed gas" See § 173.300.

"Consumer commodity" means a material that is packaged and distributed in a form intended or suitable for sale through retail sales agencies or instrumentalities for consumption by individuals for purposes of personal care or household use. This term also includes drugs and medicines.

"Containership" means a cargo vessel designed and constructed to transport, within specifically designed cells, portable tanks and freight containers which are lifted on and off with their contents intact.

"Corrosive material" See § 173.240.

"Crewmember" means a person assigned to perform duty in an aircraft during flight time.

"Cylinder" means a pressure vessel designed for pressures higher than 40 psia and having a circular cross section. It does not include a portable tank, multi-unit tank car tank, cargo tank, or tank car.

"District Commander" means the District Commander of the Coast Guard, or his authorized representative, who has jurisdiction in the particular geographical area.

"DOD" means the U.S. Department of Defense.

"Engine" means a locomotive propelled by any form of energy and used by a railroad.

"Etiologic agent" See § 173.386.

"F" means degree Fahrenheit.

"Ferry vessel" means a vessel which is limited in its use to the carriage of deck passengers or vehicles or both, operates on a short run on a frequent schedule between two points over the most direct water route, other than in ocean or coastwise service, and is offered as a public service of a type normally attributed to a bridge or tunnel.

"Flammable gas" See § 173.300(b).

"Flammable liquid" See § 173.115 (a)(1).

"Flammable solid" See § 173.150.

"Flash point" means the minimum temperature at which a substance gives off flammable vapors which in contact with spark or flame will ignite. For liquids, see § 173.115 and for solids, see § 173.150.

"Freight container" means a reusable container having a volume of 64 cubic feet or more, designed and constructed to permit being lifted with its contents intact and intended primarily for containment of packages (in unit form) during transportation.

"Fuel tank" means a tank other than a cargo tank, used to transport flammable or combustible liquid, or compressed gas for the purpose of supplying fuel for propulsion of the transport vehicle to which it is attached, or for the operation of other equipment on the transport vehicle.

"Full load" applies only to radioactive materials. See § 173.389 of this subchapter for its definition.

"Gross weight" means the weight of a packaging plus the weight of its contents.

"Hazardous material" means a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated.

"Hermetically sealed" means closed by fusion, gasketing, crimping, or equivalent means so that no gas or vapor can enter or escape.

"IATA" means International Air Transport Association.

"IMCO" means Inter-governmental Maritime Consultative Organization.

"Intermodal container" means a freight container designed and constructed to permit it to be used interchangeably in two or more modes of transport.

"Irritating material" See § 173.381.

"Limited quantity," when specified as such in a section applicable to a particular material with the exception of Poison B materials, means the maximum amount of a hazardous material for which there is a specific labeling and packaging exception.

"Magnetic materials" See § 173.1020.

"Magazine vessel" means a vessel used for the receiving, storing, or dispensing of explosives.

"Marking" means applying the descriptive name, instructions, cautions, weight, or specification marks or combination thereof required by this subchapter to be placed upon outside containers of hazardous materials.

"Mixture" means a material composed of more than one chemical compound or element.

"Mode" means any of the following transportation methods: rail, highway, air, or water.

"Motor vehicle" includes a vehicle, machine, tractor, trailer, or semi-trailer, or any combination thereof, propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property. It does not include a vehicle, locomotive, or car operated exclusively on a rail or rails, or a trolley bus operated by electric power derived from a fixed overhead wire, furnishing local passenger transportation similar to street-railway service.

"MTB" means the Materials Transportation Bureau, U.S. Department of Transportation, Washington, D.C. 20590.

"MTB-TSC" means the Transportation Systems Center, Cambridge, Mass. 02142 (for functions performed under the direction and supervision of the MTB).

"Name of contents" means the proper shipping name as specified in § 172.101.

"Navigable waters" means the navigable waters of the United States, its territories, and possessions, but does not include the navigable waters of the Panama Canal Zone.

"Net weight" means a measure of weight referring only to the contents of a package, and does not include the weight of any packaging material.

"N.O.S." means not otherwise specified.

"NRC (non-reusable container)" means a container whose reuse is restricted in accordance with the provisions of § 173.28.

"Occupied caboose" means a rail car being used to transport non-passenger personnel.

"Officer in Charge, Marine Inspection" means a person from the civilian or military branch of the Coast Guard designated as such by the Commandant and who under the supervision and direction of the Coast Guard District Commander is in charge of a designated inspection zone for the performance of duties with respect to the enforcement and administration of Title 52, Revised Statutes, acts amendatory thereof or supplemental thereto, rules and regulations thereunder, and the inspection required thereby.

"Operator" means a person who controls the use of an aircraft, vessel, or vehicle.

"Organic peroxide" See § 173.151.

"ORM" means Other Regulated Materials.

"Outside container" means the outermost enclosure used in transporting a hazardous material other than a freight container.

"Overpack" means an enclosure not intended for reuse that is used by a single consignor to consolidate two or more packages for convenience in handling.

"Oxidizer" or "Oxidizing material" See § 173.151.

"Package" or "Outside Package" means a packaging plus its contents.

"Packaging" means the assembly of one or more containers and any other

components necessary to assure compliance with the minimum packaging requirements of this subchapter and includes containers (other than freight containers or overpacks), portable tanks, cargo tanks, tank cars, and multi-unit tank car tanks.

"Passenger" (With respect to vessels and for the purposes of Part 176 only) means a person being carried on a vessel other than—

(1) The owner or his representative;

(2) The operator;

(3) A bona fide member of the crew engaged in the business of the vessel who has contributed no consideration for his carriage and who is paid for his services; or

(4) A guest who has not contributed any consideration directly or indirectly for his carriage.

"Passenger-carrying aircraft" means an aircraft that carries any person other than a crewmember, company employee, an authorized representative of the United States, or a person accompanying the shipment.

"Passenger vessel" means—(1) A vessel subject to any of the requirements of the International Convention for the Safety of Life at Sea, 1960, which carries more than 12 passengers;

(2) A cargo vessel documented under the laws of the United States and not subject to the Convention, which carries more than 16 passengers;

(3) A cargo vessel of any foreign nation that extends reciprocal privileges and is not subject to the Convention and which carries more than 16 passengers; and

(4) A vessel engaged in a ferry operation and which carries passengers.

"Person" means an individual, firm, co-partnership, corporation, company, association, or joint-stock association, and includes any trustee, receiver, assignee, or personal representative thereof.

"Placarded car" means a rail car which is placarded in accordance with the requirements of Part 172 of this subchapter except those cars displaying only the FUMIGATION placards as required by § 172.510.

"Poison A" See § 173.326.

"Poison B" See § 173.343.

"Portable tank" means any packaging (except a cylinder having a 1000-pound or less water capacity) over 110 U.S. gallons capacity and designed primarily to be loaded into or on or temporarily attached to a transport vehicle or ship, and equipped with skids, mounting, or accessories to facilitate handling of the tank by mechanical means. It does not include any cargo tank, tank car tank, tank of the DOT-106A or 110A type, or trailers carrying 3AX, 3AAX, or 3T cylinders.

"Private track" or "Private siding" means track located outside of a carrier's right-of-way, yard, or terminals where the carrier does not own the rails, ties, roadbed, or right-of-way and includes track or portion of track which is devoted to the purpose of its user either by lease or written agreement, in which case the lease or written agreement is considered equivalent to ownership.

"Proper shipping name" means the name of the hazardous material shown in Roman print (not italics) in § 172.101 of this subchapter.

"P.s.i.a. or psia" means pounds per square inch absolute.

"P.s.i.g. or psig" means pounds per square inch gauge.

"Public aircraft" means an aircraft used only in the service of a government or political subdivision. It does not include a government-owned aircraft engaged in carrying passengers or property for commercial purposes.

"Public vessel" means a vessel owned by and being used in the public service of the United States. It does not include a vessel owned by the United States and engaged in a trade or commercial service or a vessel under contract or charter to the United States.

"Pyrophoric liquid" See § 173.115.

"Pyrophoric solid" See § 173.150.

"Radioactive materials" See § 173.389.

"Railroad" means a person engaged in transportation by rail.

"Rail freight car" means a car designed to carry freight or non-passenger personnel by rail, and includes a box car, flat car, gondola car, hopper car, tank car, and occupied caboose.

"Research" means investigation of experimentation aimed at the discovery of new theories or laws and the discovery and interpretation of facts or revision of accepted theories or laws in the light of new facts.

"Separated by a complete hold or compartment from" See § 176.83.

"Separated from" See § 176.83.

"Separated longitudinally by a complete hold or compartment from" See § 176.83.

"Sheathing" means a covering consisting of a smooth layer of wood placed over metal and secured to prevent any movement.

"Shipping paper" means a shipping order, bill of lading, manifest or other shipping document serving a similar purpose and containing the information required by §§ 172.202, 172.203 and 172.204.

"STC (single-trip container)" means a container that may not be refilled and reshipped after having been previously emptied, except as provided in § 173.28.

"Solution" means any homogeneous liquid mixture of two or more chemical compounds or elements that will not undergo any segregation under conditions normal to transportation.

"Spontaneously combustible material (solid)" means a solid substance (including sludges and pastes) which may undergo spontaneous heating or self-ignition under conditions normally incident to transportation or which may upon contact with the atmosphere undergo an increase in temperature and ignite.

"Stowage" means the act of placing hazardous materials on board a vessel.

"Strong outside container" means the outermost enclosure which provides protection against the unintentional release of its contents under conditions normally incident to transportation.

"Technical name" means a recognized chemical name currently used in scientific and technical handbooks, journals, and texts. Generic descriptions authorized for use as technical names are, Organic phosphate compound, Organic phosphorus compound, Organic phosphate compound mixture, Organic phosphorus compound mixture, Methyl parathion, and Parathion.

"TOFC" means trailer-on-flat-car.

"Trailership" means a vessel other than a carfloat, specifically equipped to handle highway vehicles, and fitted with installed securing devices to tie down each vehicle.

"Train" means one or more engines coupled with one or more rail cars, except during switching operations or where the operation is that of classifying and assembling rail cars within a railroad yard for the purpose of making or breaking up trains.

"Trainship" means a vessel other than a rail car ferry or carfloat, specifically equipped to transport railroad vehicles, and fitted with installed securing devices to tie down each vehicle.

"Transport vehicle" means a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle.

"UFC" means Uniform Freight Classification.

"United States" means the fifty States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, or Guam.

"Vessel" includes every description of watercraft, used or capable of being used as a means of transportation on the water.

"Viscous liquid" means a liquid material which has a measured viscosity in excess of 2500 centistokes at 25° C (77° F.) when determined in accordance with the procedures specified in ASTM Method D 445-72 "Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)" or ASTM Method D 1200-70 "Viscosity of Paints, Varnishes, and Lacquers by Ford Viscosity Cup."

"Volatility" refers to the relative rate of evaporation of materials to assume the vapor state.

"Water reactive material (solid)" means any solid substance (including sludges and pastes) which, by interaction with water, is likely to become spontaneously flammable or to give off flammable or toxic gases in dangerous quantities.

"Water resistant" means having a degree of resistance to permeability by and damage caused by water in liquid form.

"W.T." means watertight.

[Amdt. 171-32, 41 FR 15994, Apr. 15, 1976, as amended by Amdt. 171-34, 41 FR 38179, Sept. 9, 1976; Amdt. 171-32A, 41 FR 40629, Sept. 20, 1976; Amdt. 171-32B, 41 FR 57020, Dec. 30, 1976; Amdt. 171-41, 43 FR 36446, Aug. 17, 1978; Amdt. 171-42, 43 FR 48643, Oct. 19, 1978]

§ 171.9 Rules of construction.

(a) In this subchapter, unless the context requires otherwise: (1) Words imparting the singular include the plural;

(2) Words imparting the plural include the singular; and

(3) Words imparting the masculine gender include the feminine;

(b) In this subchapter, the word: (1) "Shall" is used in an imperative sense;

(2) "Must" is used in an imperative sense;

(3) "Should" is used in a recommendatory sense;

(4) "May" is used in a permissive sense to state authority or permission to do the act described, and the words "no person may * * *" or "a person may not * * *" means that no person is required, authorized, or permitted to the act described; and

(5) "Includes" is used as a word of inclusion not limitation.

[Amdt. 171-32, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 171-32A, 41 FR 40630, Sept. 20, 1976]

§ 171.10 Flammable or combustible liquids in bulk on board vessels.

(a) Nothing in Parts 170-189 of this subchapter shall be construed as affecting the transportation of flammable or combustible liquids in bulk on board vessels which transportation is governed by the rules and regulations promulgated under R.S. 4417a; 46 U.S.C. 391a (46 CFR Part 146).

[29 FR 18653, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 171-42, 43 FR 48643, Oct. 19, 1978]

§ 171.11 [Reserved]

§ 171.12 Import and export shipments.

(a) Except in the case of a shipment from Canada conforming to § 173.8, each person importing a hazardous material into the United States shall provide the shipper and the forwarding agent at the place of entry into the United States timely and complete information as to the requirements of this subchapter that will apply to the shipment of the material within the United States. The shipper, directly or through the forwarding agent at the place of entry, shall provide the initial carrier in the United States the certificate of compliance required by § 172.204. The carrier may not accept the material for transportation unless the required certification is provided.

(b) The requirements of § 171.2 with respect to classification and labeling notwithstanding, a hazardous material (other than Class A explosives or radioactive materials) which is classed and labeled in accordance with the IMCO Code and being imported into or exported from the United States or passing through the United States in the course of being shipped between places outside the United States may be offered and accepted for transportation and transported within the United States if it is otherwise offered, accepted, and transported in accordance with this subchapter. When a material is transported within the United States by air, highway, or rail under an IMCO class, the entry on the shipping paper required by § 172.202(a)(2) must include a class set forth in this subchapter that most appropriately corresponds to the IMCO class. For example, according to IMCO, the description and class for ethylene oxide is "Ethylene Oxide, 2" or "Ethylene Oxide, Gas 2,". While ethylene oxide in domestic transportation would be classed a flammable liquid, the class in this subchapter that most appropriately corresponds to the IMCO class is "flammable gas". The proper entry would therefore be "Ethylene Oxide, Flammable Gas" or "Ethylene Oxide, 2 Flammable Gas".

(c) The requirements of § 171.2 with respect to specification identification markings on packages notwithstanding, a package of hazardous materials (other than a compressed gas cylinder or a package of more than 110 gallons capacity) being imported into or exported from the United States or passing through the United States in the course of being shipped between places outside the United States may be offered and accepted for transportation and transported within the United States if the package specification identification markings required by Part 178 are clearly and legibly displayed on the surface of the package or on decals or tags securely affixed to the package, and the package is otherwise offered, accepted, and transported in accordance with this subchapter.

(d) Section 171.2 notwithstanding, a hazardous material (other than an explosive or a radioactive material) being imported into or exported from the United States or passing through the United States in the course of being shipped between places outside the United States may be offered and accepted for transportation and transported by motor vehicle within a single port area (including contiguous harbors) when packaged, marked, classed and labeled in accordance with the IMCO Code, if the hazardous material is offered and accepted in accordance with the requirements of Subparts C and F of Part 172 of this subchapter pertaining to shipping papers and placarding. (See § 176.11 for exceptions applicable to vessels.)

(e) Not withstanding the quantity limitations of § 173.389 (c) and (l) of this subchapter, any package of radioactive materials (except for fissile radioactive materials or Type B quantities under § 173.393b of this subchapter) which otherwise conform to the requirements of this subchapter applicable to Type A quantities or low specific activity materials may be offered and accepted for transportation and transported within the United States if—

(1) The package is being imported into the United States, or is passing through in the course of being shipped between places outside the United States;

(2) The country of origin has adopted the Type A quantity limitations and low specific activity materials definition set forth in the IAEA Regulations for the Safe Transport of Radioactive Materials, 1973 Revised Edition; and

(3) The contents of the package have been limited as a Type A quantity or a low specific activity material in accordance with the IAEA Type A quantity limitations and low specific activity materials definition adopted by the originating country.

[Amdt. 171-32, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 171-32A, 41 FR 40630, Sept. 20, 1976; Amdt. 171-38, 43 FR 10918, Mar. 16, 1978]

§ 171.13 Emergency regulations.

(a) Until further order of the Department, shipments of explosives may be made upon requests of the Departments of the Army, Navy, and Air Force of the United States Government complying with the following:

(1) Shippers' and carriers' regulations; handling detonating agents and explosives and explosive ammunition in same car or vehicle. Detonating fuzes, class A explosives, primer-detonator assemblies or other detonating elements containing explosive components, if of a safe type, may be shipped either assembled in bombs, depth charges, mines, projectiles, or torpedoes (torpedo warheads) or in properly packed containers in the same car or vehicle with bombs, depth charges, mines, projectiles, boosters, or torpedoes (torpedo warheads) when separated from the explosive bombs, depth charges, mines, projectiles, boosters, or torpedoes (torpedo warheads) by not less than 3 feet. The intervening space of 3 feet must be filled with dry sand or dry earth in bags or in a crib so constructed or lined as to prevent sifting of the sand or earth. The crib must be secured against movement.

(2) When bomb fuzes are packed with bomb fin assemblies, either crated or boxed in wooden or metal containers, the sand or earth filled space between bombs and the fuzes may be omitted provided adequate blocking and bracing is supplied to

prevent the bombs from crushing and injuring the detonating fuzes due to ordinary shocks incident to transportation.

[29 FR 18653, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

§ 171.14 Specification markings.

(a) Notwithstanding any other requirements of Parts 170-189 of this subchapter, the letters "ICC" may continue to be placed on any packaging requiring specification markings until January 1, 1970.

(b) Packagings with the specification markings "ICC" placed thereon before January 1, 1970, may be continued in service as marked.

[Amdt. 171-2, 33 FR 17918, Dec. 3, 1968, as amended by Amdt. 171-42, 43 FR 48643, Oct. 19, 1978]

§ 171.15 Immediate notice of certain hazardous materials incidents.

(a) At the earliest practicable moment, each carrier who transports hazardous materials shall give notice in accordance with paragraph (b) of this section after each incident that occurs during the course of transportation (including loading, unloading and temporary storage) in which as a direct result of hazardous materials—

(1) A person is killed;

(2) A person receives injuries requiring his hospitalization;

(3) Estimated carrier or other property damage exceeds $50,000;

(4) Fire, breakage, spillage, or suspected radioactive contamination occurs involving shipment of radioactive material. (See also §§ 174.45, 175.45, 176.48, and 177.807 of this subchapter.); or

(5) Fire, breakage, spillage, or suspected contamination occurs involving shipment of etiologic agents; or

(6) A situation exists of such a nature that, in the judgment of the carrier, it should be reported in accordance with paragraph (b) of this section even though it does not meet the criteria of paragraph (a)(1), (2), or (3) of this section; e.g., a continuing danger of life exists at the scene of the incident.

(b) Each notice required by paragraph (a) of this section shall be given the Department by telephone at Area Code (202) 426-1830. Notice involving etiologic agents may be given the Director, Center for Disease Control, U.S. Public Health Service, Atlanta, Ga., Area Code (404) 633-5313, in place of the notice to the Department. Each notice must include the following information:

(1) Name of reporter.

(2) Name and address of carrier represented by reporter.

(3) Phone number where reporter can be contacted.

(4) Date, time, and location of incident.

(5) The extent of injuries, if any.

(6) Classification, name, and quantity of hazardous materials involved, if such information is available.

(7) Type of incident and nature of hazardous material involvement and whether a continuing danger to life exists at the scene.

(c) Each carrier making a report under this section shall also make the report required by § 171.16.

[Amdt. 171-7, 35 FR 16837, Oct. 3, 1970, as amended by Amdt. 171-13, 36 FR 21201, Nov. 4, 1971; Amdt. 171-18, 38 FR 8162, Mar. 29, 1973; Amdt. 171-32B, 41 FR 57020, Dec. 30, 1976]

§ 171.16 Detailed hazardous materials incident reports.

(a) Each carrier who transports hazardous materials shall report in writing in duplicate on DOT Form F 5800.1[1] to the Department within 15 days of the date of discovery, each incident that occurs during the course of transportation (including loading, unloading, or temporary storage) in which, as a direct result of the hazardous materials, any of the circumstances set forth in § 171.15(a) occurs or there has been an unintentional release of hazardous materials from a package (including a tank).

(b) Each carrier making a report under this section shall send that report to the Associate Director for Hazardous Materials Regulation, Department of Transportation, Washington, D.C. 20590.

[1] Filed as part of the original document.

[Amdt. 171-7, 35 FR 16837, Oct. 3, 1970, as amended by Amdt. 171-42, 43 FR 48643, Oct. 19, 1978]

§ 171.17 [Reserved]

§ 171.18 Continuation of effectiveness of existing Bureau of Explosives registrations.

A registration filed with the Bureau of Explosives in compliance with a requirement of this subchapter, which is valid at the time that registration function is assumed by the MTB or MTB-TSC, remains valid to the same extent as if it had been filed originally with MTB or MTB-TSC.

[Amdt. 171-41, 43 FR 36446, Aug. 17, 1978]

PART 172—HAZARDOUS MATERIALS TABLE AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

Subpart A—General

Subpart B—Table of Hazardous Materials, Their Description, Proper Shipping Name, Class, Label, Packaging, and Other Requirements

Subpart C—Shipping Papers

Subpart D—Marking

Subpart E—Labeling

Subpart F—Placarding

AUTHORITY: 49 U.S.C. 1803, 1804; 49 CFR 1.53(e), unless otherwise noted.

EDITORIAL NOTE: Incorporation by reference provisions approved by the Director of the Federal Register June 30, 1977, and a copy of the incorporated material filed in the FEDERAL REGISTER library.

EFFECTIVE DATE NOTE: At 43 FR 48643, Oct. 19, 1978, amendments were made to this Part, effective Oct. 19, 1978. At 43 FR 51020, Nov. 2, 1978, the effective date was corrected to Sept. 30, 1978.

Subpart A—General

§ 172.1 Purpose and scope.

This Part lists and classifies those materials which the Department of Transportation has designated as hazardous materials for purposes of transportation and prescribes the requirements for shipping papers, package marking, labeling, and transport vehicle placarding applicable to the shipment and transportation of those hazardous materials.

[Amdt. 172-29, 41 FR 15997, Apr. 15, 1976]

§ 172.3 Applicability.

(a) This Part applies to—(1) Each person who offers a hazardous material for transportation, and

(2) Each carrier by air, highway, rail, or water who transports a hazardous material.

(b) When a person, other than one of those provided for in paragraph (a) of this section, performs a packaging labeling or marking function required by this part, that person shall perform the function in accordance with this Part.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-32, 41 FR 38179, Sept. 9, 1976]

Subpart B—Table of Hazardous Materials, Their Description, Proper Shipping Name, Class, Label, Packaging, and Other Requirements

§ 172.100 Purpose and use of the table.

(a) The table set forth in § 172.101 constitutes a designation of the materials listed therein as hazardous materials for purposes of the transportation of those materials in commerce. In addition, it classifies and specifies requirements and references other requirements set forth elsewhere in this subchapter pertaining to the labeling, packaging and transportation of those materials.

(b) Column 1 contains three symbols: *, A, and W. (1) *: An asterisk before a proper shipping name means that the material described in column 2 may or may not be regulated under the class shown depending on whether or not the commodity meets the definition of the hazard class listed for that entry. If the commodity does not meet the definition of the class stated, the shipper shall determine whether or not the material meets the definition of any other hazard class, and shall prepare the material for shipment in compliance with the requirements of that class. A material meeting the description of an asterisk entry is not subject to the requirements of this subchapter if the material does not meet the definition of a hazardous material.

(2) A: The symbol "A" before the shipping name means that the material described in column 2 is subject to the requirements of this subchapter only for transportation by aircraft.

(3) W: The symbol "W" before the shipping name means that the material described in column 2 is subject to the requirements of this subchapter only for transportation by vessel.

(c) Column 2 lists the proper shipping name of those materials which are designated as hazardous materials. Proper shipping names are limited to those shown in Roman type (not italics). In the selection of a proper shipping name to describe a particular material, if the correct technical name of that material is not shown, or is not appropriate, selection must be made from the general descriptions or n.o.s. entries corresponding to the specific hazard class of the material being shipped. The name that more appropriately describes the commodity must be used, i.e., an alcohol must be shipped as an alcohol n.o.s. rather than a flammable liquid n.o.s. unless the technical name of the alcohol is listed (methyl alcohol). Some mixtures may be more aptly described by their application such as: "Compound, cleaning liquid" or "Compound, rust removing," rather than "Corrosive liquid n.o.s." For materials that meet the definition of more than one hazard class, the hazard class must be determined by using the precedence given in § 173.2 of this subchapter. If it is believed that an adequate description of a material is not given in § 172.101, the Office of Hazardous Materials Regulation should be contacted for clarification.

(1) Shipping names may be used in the singular or plural in either capital or lower case letters.

(2) The words in italics are not part of the proper shipping name but may be used in addition to the proper shipping name. The word "or" in italics indicates that any terms in the sequence may be used as the proper shipping name as appropriate.

(3) The abbreviation "n.o.l." which means "not otherwise indexed" or "n.o.i.b.n." which means "not otherwise indexed by name" may be used interchangeably with "n.o.s."

(4) When qualifying words are used as part of the proper shipping name, their sequence on package markings and shipping paper descriptions is optional.

(5) When one entry references another entry by use of a *"see"*, if both names are in Roman type, either name may be used as a proper shipping name (e.g. Isopropanol *see* Alcohol, n.o.s.).

(6) When a shipping name includes a concentration range as part of the shipping description, the actual concentration being shipped, if it is within the range stated, may be used in place of the concentration range. For example: Hydrogen peroxide solution (8% to 40% peroxide) may be shipped described as "Hydrogen peroxide solution, 30% peroxide." or "30% Hydrogen peroxide solution."

(7) The use of the prefix "mono" is optional in any shipping name when appropriate. Thus, monoethanolamine may be used interchangeably with ethanolamine. In the "trichloro- monofluoromethane" the term "mono" is considered as a prefix to the term "fluoromethane."

(d) Column 3 contains a designation of the hazard class corresponding to each proper shipping name or the word "Forbidden". A material for which the class entry is "Forbidden" must not be offered or accepted for transportation. When re-evaluation of test data or new test data indicates a need to modify the hazard class or labels specified for a material specifically identified in § 172.101, these data should be reported to the Office of Hazardous Materials Regulation.

(e) Column 4 specifies the labels required to be applied to each outside packaging, subject to the additional labeling requirements in § 172.402.

(f) Column 5 references the applicable packaging section of Part 173. Exceptions from some of the requirements of this subchapter are noted in column 5(a). References to specific packaging requirements and exceptions other than those specified in 5(a) are noted in column 5(b).

(g) Column 6 indicates the maximum net quantity in one package for air transportation or passenger railcar;

(1) Column 6(a) specifies the maximum net quantity permitted in one package for passenger-carrying aircraft or passenger railcar. For air transportation, any material forbidden on passenger-carrying aircraft but permitted on cargo aircraft, or which exceeds the maximum quantity authorized on passenger-carrying aircraft, must be shipped by cargo-only aircraft and bear the CARGO AIRCRAFT ONLY label as described in § 172.448.

(2) Column 6(b) lists the maximum net quantity for one outside package on cargo aircraft. Packaging must bear

the CARGO AIRCRAFT ONLY label when the quantity of hazardous material exceeds that authorized on passenger-carrying aircraft, or is forbidden on passenger-carrying aircraft.

(3) For flammable liquids, the net quantity limitation for carriage aboard a passenger-carrying aircraft or railcar is one gallon per package, and for cargo-only aircraft is 55 gallons per package, if:

(i) The material has a flash point of 73° F. or higher;

(ii) The material does not meet the definition of any other hazard class as defined in this Part; and

(iii) The flash point, or an indication that the flash point is 73° F. or higher, is marked on the outside package.

(h) Column 7 specifies each of the authorized locations on board cargo vessels and passenger vessels and certain additional requirements for shipments of each listed hazardous material. Section 176.63 of this subchapter sets forth the physical requirements for each of the authorized locations listed in Column 7. (For bulk shipments by water see 46 CFR Parts 30 to 40, 48, 64, 70, 98, 148, 151, and 154.)

(1) "1" means the material may be stowed "on deck" subject to the requirements of § 176.63(b) of this subchapter. When both "on deck" and "under deck" are authorized, "under deck" should be used if it is available.

(2) "2" means the material may be stowed "under deck" in a compartment or hold subject to the requirements of § 176.63(c). When both "on deck" and "under deck" are authorized, "under deck" should be used if it is available.

(3) "3" means the material may be stowed "under deck away from heat" in a ventilated compartment or hold subject to the requirements of § 176.63(d) of this subchapter.

(4) "4" means the material is authorized to be transported in only the limited quantities specified in the CFR section listed in Column 5 and is subject to the stowage requirements specified for a cargo vessel for the same material.

(5) "5" means the material is forbidden and may not be offered or accepted for transportation.

(6) "6" means the material is authorized to be transported in a magazine subject to the requirements of §§ 176.135 through 176.144 of this subchapter.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e))

[Amdt. 172-29, 41 FR 15906, Apr. 15, 1976, as amended by Amdt. 172-29-A, 41 FR 40630, Sept. 20, 1976; Amdt. 172-29-B, 41 FR 57020, Dec. 30, 1976; Amdt. 172-38, 42 FR 57964, Nov. 7, 1977; Amdt. 172-46, 43 FR 48643, Oct. 19, 1978]

GENERAL INSTRUCTIONS FOR 172.101
HAZARDOUS MATERIALS TABLE

Example: Hazardous Material - Alkaline Corrosive Liquid

The material is found under column 2. Columns 3 and 4 are self-explanatory. Packaging requirements and/or exceptions are found in column 5. For the alkaline corrosive liquid, Title 49, Sections 173.244 and 173.249 are identified. Once this is done, you go to those sections to identify the proper container and any requirements in its use. Section 173.249 lists the containers acceptable for use with alkaline corrosive liquids. For example, item (3) lists spec. 5 for metal drums. Next, you look at Section 178.80, which gives the exact specifications for that type of container.

Column 6 lists limitations on package quantities such as one quart and five gallons. Column 7 identifies the location of shipments for cargo or passenger vessels such as 1.2 which says the material may be stowed either "on deck" or "under deck."

Once you have done this, you have all the neccessary information to identify, package, label, and ship the material as per the regulations.

§172.101 Hazardous Materials Table (cont'd)

(1) */ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not excepted)	(5) Packaging (a) Exceptions	(5) Packaging (b) Specific requirements	(6) Maximum net quantity in one package (a) Passenger carrying aircraft or railcar	(6) Maximum net quantity in one package (b) Cargo only aircraft	(7) Water shipments (a) Cargo vessel	(7) Water shipments (b) Passenger vessel	(7) Water shipments (c) Other requirements
	Acetyl chloride	Flammable liquid	Flammable liquid	173.244	173.247	1 quart	1 gallon	1	1	Stow away from alcohols. Keep cool and dry. Separate longitudinally by an intervening complete compartment or hold from explosives.
	Acetylene	Flammable gas	Flammable gas	None	173.303	Forbidden	300 pounds	1	1	Shade from radiant heat
A	Acetylene tetrabromide	ORM-A	None	173.505	173.510	10 gallons	55 gallons			
	Acetyl iodide	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Acetyl peroxide solutions, *not over 25% peroxide*	Organic peroxide	Organic peroxide	173.153	173.222	Forbidden	1 quart	1,2	1	
	Acid butyl phosphate	Corrosive material	Corrosive	173.244	173.245	1 quart	5 gallons	1,2	1,2	Glass carboys in hampers not permitted under deck
	Acid carboy empty. *See* Carboy, empty									
*	Acid, liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	4	Keep cool
*	Acid, sludge	Corrosive material	Corrosive	None	173.248	Forbidden	1 quart	1,2	1	
	Acrolein, inhibited	Flammable liquid	Flammable liquid and Poison	None	173.122	Forbidden	1 quart	1,2	5	Keep cool. Stow away from living quarters
	Acrylic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	1	
	Acrylonitrile	Flammable liquid	Flammable liquid and Poison	None	173.119	Forbidden	1 quart	1,2	5	Keep cool

	Actuating cartridge, explosive (*fire extinguisher, or valve*)	Class C explosive	Explosive C	173.114		50 pounds	150 pounds	1,2	1,2	Keep cool and dry
*	Adhesive, n.o.s. *See* Cement, liquid, n.o.s.									
	Aerosol product, each aerosol container exceeding 50 cubic inches capacity. See Compressed gas, n.o.s.									
*	Air, compressed	Nonflammable gas	Nonflammable gas	173.306	173.302	150 pounds	300 pounds	1,2	1,2	
	Aircraft rocket engine (*Commercial*)	Flammable solid	Flammable solid	None	173.238	Forbidden	550 pounds	1,3	5	
	Aircraft rocket engine igniter (*Commercial*)	Flammable solid	Flammable solid	None	173.238	Forbidden	25 pounds	1,3	5	
	Airplane flare. See Fireworks, special									
*	Alcohol, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.125	1 quart	10 gallons	1,2	1	
*	Alcohol, n.o.s.	Combustible liquid	None	173.118a	None	No limit	No limit	1,2	1,2	
	Aldrin	Poison B	Poison	173.364	173.376	50 pounds	200 pounds	1,2	1,2	
A	Aldrin, cast solid	ORM-A	None	173.505	173.510	No limit	No limit			
	Aldrin mixture, dry (*with more than 65% aldrin*)	Poison B	Poison	173.364	173.376	50 pounds	200 pounds	1,2	1,2	
A	Aldrin mixture, dry, with 65% or less aldrin	ORM-A	None	173.505	173.510	No limit	No limit			
	Aldrin mixture, liquid (*with more than 60% aldrin*)	Poison B	Poison	173.345	173.361	1 quart	55 gallons	1,2	1,2	If flash point less than 141 DEG F., segregation same as for flammable liquids
A	Aldrin mixture, liquid, with 60% or less aldrin	ORM-A	None	173.505	173.510	No limit	No limit			
	Alkaline corrosive battery fluid	Corrosive material	Corrosive	173.244	173.249 173.257	1 quart	5 gallons	1,2	1,2	
	Alkaline corrosive battery fluid with empty storage battery	Corrosive material	Corrosive	None	173.258	Forbidden	5 pints	1,2	1,2	
*	Alkaline corrosive liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
*	Alkaline liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
*	Alkanesulfonic acid	Corrosive material	Corrosive	173.244	173.245	5 pints	1 gallon	1,2	1	

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

Subpart A—General

Subpart B—Preparation of Hazardous Materials for Transportation

Subpart C—Explosives; Definitions and Preparation

Class A Explosives; Definitions

Class B Explosives; Definitions

Class C Explosives; Definitions

Subpart D—Flammable, Combustible, and Pyrophoric Liquids; Definitions and Preparation

Subpart E—Flammable Solids, Oxidizers, and Organic Peroxides; Definitions and Preparation

Subpart F—Corrosive Materials: Definition and Preparation

Subpart G—Compressed Gases; Definition and Preparation

Subpart H—Poisonous Materials, Etiologic Agents, and Radioactive Materials; Definitions and Preparation

Subpart I—Special Requirements for Certain Rail Shipments or Movements

Subpart J—Other Regulated Material; Definition and Preparation

Subpart K—Other Regulated Material; ORM-A

AUTHORITY: 49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e), unless otherwise noted.

NOTE: Nomenclature changes to Part 173 appear at 43 FR 48643 (Amdt. 173-121, Oct. 19, 1978.)

NOTE: For a notice document notifying shippers of hazardous materials of the applicable regulations in this part see 40 FR 33066, Aug. 6, 1975.

EFFECTIVE DATE NOTE: At 43 FR 48643, Oct. 19, 1978, amendments to this Part were made, effective Oct. 19, 1978. At 43 FR 51020, Nov. 2, 1978, the effective date was corrected to Sept. 30, 1978.

Subpart A—General

§ 173.1 Purpose and scope.

(a) This Part defines hazardous materials for transportation purposes and prescribes certain requirements to be observed in preparing them for shipment by air, highway, rail, or water, or any combination thereof.

(b) A shipment that is not prepared for shipment in accordance with this subchapter may not be offered for transportation by air, highway, rail, or water. It is the duty of each person who offers hazardous materials for transportation to instruct each of his officers, agents, and employees having any responsibility for preparing hazardous materials for shipment as to applicable regulations in this subchapter.

(c) When a person other than the person preparing a hazardous material for shipment performs a function required by this Part, that person shall perform the function in accordance with this Part.

[Amdt. 173-94, 41 FR 16062, Apr. 15, 1976, as amended by Amdt. 173-100, 41 FR 40476, Sept. 20, 1976]

§ 173.2 Classification of a material having more than one hazard as defined in this Part.

(a) Except as provided in paragraph (b) of this section, a hazardous material, having more than one hazard as defined in this part must be classed according to the following order of hazards:

(1) Radioactive material.
(2) Poison A.
(3) Flammable gas.
(4) Non-flammable gas.
(5) Flammable liquid.
(6) Oxidizer.
(7) Flammable solid.
(8) Corrosive material (liquid).
(9) Poison B.
(10) Corrosive material (solid).
(11) Irritating materials.
(12) Combustible liquid (in containers having capacities exceeding 110 gallons).
(13) ORM-B.
(14) ORM-A.
(15) Combustible liquid (in containers having capacities of 110 gallons or less.)

(b) *Exceptions.* Paragraph (a) of this section does not apply to—(1) a material specifically identified in § 172.101 of this subchapter;

(2) An explosive required to be classed and approved by § 173.86;

(3) An etiologic agent identified in § 173.386 as those materials listed in 42 CFR 72.25(c); or

(4) An organic peroxide. (See § 172.101 and § 173.151a of this subchapter.)

[Amdt. 173-94, 41 FR 16062, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40680, Sept. 20, 1976]

§ 173.3 Packaging and exceptions.

(a) The packaging of hazardous materials for transportation by air, highway, rail, or water must be as specified in this Part. Methods of manufacture, packing, and storage of hazardous materials, that affect safety in transportation, must be open to inspection by a duly authorized representative of the initial carrier or a representative of the Department. Methods of manufacture and related functions necessary for completion of a DOT specification packaging must be open to inspection by a representative of the Department.

(b) The regulations setting forth packaging requirements for a specific material apply to all modes of transportation unless otherwise stated, or unless exceptions from packaging requirements are authorized. For example, the restriction in § 173.240(b) applicable to cargo-only aircraft applies only to quantities in excess of those allowable under § 173.244. Quantities covered under § 173.244 may also be shipped by cargo-only aircraft.

(c) Packages, other than freight containers, overpacks, portable tanks, cargo tanks and tank cars, that are damaged or leaking and which contain corrosive liquids, corrosive solids, flammable liquids, flammable solids, oxidizers, poison B liquids, poison B solids, or irritating agents may be placed inside a DOT specification drum that is compatible with the lading, provided with adequate closures and, when necessary and appropriate, provided with sufficient cushioning and absorption material to prevent excessive movement of the inner containers and to absorb leaking liquid. Alternatively, a non-DOT specification drum, not exceeding 110-gallon capacity, having equal or greater structural integrity than that prescribed in this subchapter for the respective material, may be used as a recovery drum. Either drum is authorized only for the purpose of shipping damaged, or defective packages to a facility for disposal or repackaging.

[Amdt. 173-94, 41 FR 16062, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40680, Sept. 20, 1976; Amdt. 173-116, 43 FR 17944, Apr. 27, 1978]

§§ 173.4—173.5 [Reserved]

§ 173.6 Shipments by air.

(a) *General shipping requirements.* When the regulations indicate a hazardous material is forbidden aboard cargo-only aircraft, the material is also forbidden aboard passenger-carrying aircraft.

(b) *General packaging requirements.*

(1) In addition to the requirements of this part and Parts 175 and 178 of this subchapter, for air shipments

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each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transportation.

(2) Inner containers that are breakable (such as earthenware, glass, or brittle plastic), must be packaged to prevent breakage and leakage under conditions normally incident to transportation. These completed packagings must be capable of withstanding a 4-foot drop on solid concrete in the position most likely to cause damage. Cushioning and absorbent materials must not be capable of reacting dangerously with the contents. Where any plastic packaging is specified in this part, a plastic bag or pouch is not permitted unless specifically authorized.

(3) For any packaging with a capacity of 110 gallons or less containing liquids, sufficient outage (ullage) must be provided to prevent liquid contents from completely filling the packaging at 130° F. The primary packaging (which may include composite packaging), for which retention of the liquid is the basic function, must be capable of withstanding, without leakage, an internal absolute pressure of no less than 26 lbs./sq. inch or no less than the sum of the absolute vapor pressure of the contents at 130° F. (55° C.) and the atmospheric pressure at sea level, whichever is greater.

(4) Stoppers, corks, or other such friction-type closures must be held securely, tightly, and effectively in place with wire, tape, or other positive means. Each screw-type closure on any inside plastic packaging must be secured to prevent the closure from loosening due to vibration or substantial changes in temperature.

(5) Bags permitted by regulations as outside packaging for transportation aboard aircraft must be water resistant.

(6) For any cylinder containing hazardous materials incorporating valves, sufficient protection must be provided to prevent operation and damage to such valves during transportation, by one of the following methods:

(i) By equipping each cylinder with securely attached valve caps or protective headrings, or

(ii) By boxing or crating of the cylinder.

(7) Tank cars and tank motor vehicles containing hazardous materials may not be transported aboard aircraft.

(c) *Special labeling requirements.* See "Magnetized materials" in §§ 172.101 and 173.1020 of this subchapter and see § 172.101 for cargo-only aircraft labeling requirements.

[Amdt. 173-94, 41 FR 16063, Apr. 15, 1976, as amended by Amdt. 173-94B, 41 FR 57068, Dec. 30, 1976]

§ 173.7 U.S. Government material.

(a) Shipments of hazardous materials offered by or consigned to the Department of Defense (DOD) of the U.S. Government must be packaged, including limitations of weight, in accordance with the regulations in this subchapter or in containers of equal or greater strength and efficiency as required by DOD regulations.

(1) Hazardous materials sold by the DOD in packagings that are not marked in accordance with the requirements of this subchapter may be shipped from DOD installations if the DOD certifies in writing that the packagings are equal to or greater in strength and efficiency than the packaging prescribed in this subchapter. The shipper shall obtain such a certification in duplicate for each shipment. He shall give one copy to the originating carrier and retain the other for no less than 1 year.

(b) Shipments of radioactive materials, made by or under the direction or supervision of the U.S. Energy Research and Development Administration or the Department of Defense, and which are escorted by personnel specifically designated by or under the authority of those agencies, for the purpose of national security, are not subject to the regulations in Parts 100–189 of this subchapter.

[29 FR 18671, Dec. 29, 1964, as amended by Order 74, 32 FR 5274, Mar. 29, 1967. Redesignated, 32 FR 5606, Apr. 5, 1967; Amdt. 173-71, 38 FR 7561, Mar. 23, 1973; Amdt. 173-94, 41 FR 16063, Apr. 15, 1976]

§ 173.8 Canadian shipments and packagings.

(a) Shipments of hazardous materials which conform to the regulations of the Canadian Transport Commission (formerly the Board of Transport Commissioners for Canada), may be transported from the point of entry in the United States to their destination in the United States, or through the United States en route to a point in Canada. Empty rail tank cars may be transported in conformity with Canadian Transport Commission regulations from point of origin in the United States to point of entry into Canada.

(b) Except as specified in § 173.301(i) specification packagings made and maintained in full compliance with the corresponding specifications prescribed by the Railway Transport Committee of the Canadian Transport Commission (formerly the Board of Transport Commissioners for Canada), in its regulations for the Transportation of Dangerous Commodities by Rail, and marked in accordance therewith (e.g., BTC, CTC, etc.) may be used for the shipment of hazardous materials within the United States.

[Amdt. 173-11, 34 FR 12589, Aug. 1, 1969, as amended by Amdt. 173-94B, 41 FR 57068, Dec. 30, 1976; Amdt. 173-113, 43 FR 6786, Feb. 16, 1978]

Subpart B—Preparation of Hazardous Materials for Transportation

§ 173.21 Prohibited packing.

(a) The offering of packages of hazardous materials in the same packaging, freight container, or overpack with other hazardous materials, the mixture of contents of which would be liable to cause a dangerous evolution of heat or gas or produce corrosive materials, is forbidden except as specified in §§ 173.152(a), 173.242(a), (b), and 173.301(a).

(b) The offering for transportation of any package or container of any liquid solid or gaseous material which under conditions incident to transportation may polymerize (combine or react with itself) or decompose so as to cause dangerous evolution of heat or gas is prohibited. Such materials may be offered for transportation when properly stabilized or inhibited. Refrigeration may be used as a means of stabilization only when approved by the Bureau of Explosives.

(c) The offering for transportation of any package or container of any material which will cause a dangerous evolution of heat or gas under conditions normally incident to transportation is forbidden.

(d) The offering for transportation of any package containing a cigarette lighter or other similar ignition device charged with fuel and equipped with an ignition element, or any self-lighting cigarette, is forbidden unless the design of the device and its packaging insofar as they affect safety in transportation have been examined and approved by MTB-TSC. (An approval which was issued by the B of E remains valid to the same extent as if it had been issued by MTB-TSC.) For lighters containing flammable gases, also see § 173.308.

[29 FR 18671, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16063, Apr. 15, 1976; Amdt. 173-119, 43 FR 36446, Aug. 17, 1978]

§ 173.22 Shipper's responsibility.

(a) Unless otherwise provided in this part, before offering a hazardous material for shipment in a container the shipper shall determine that the container has been made, assembled with all parts or fittings in their proper place and properly secured, and marked in compliance with applicable specifications prescribed in Parts 178 and 179 of this subchapter or with specifications of the Department in effect at date of manufacture of container. In determining whether a specification container is manufactured in accordance with applicable specifications, the shipper may accept the manufacturer's certification or specification marking. (See §§ 178.0-2 and 179.1 of this subchapter.) For containers supplied by the carrier, the shipper may rely on the manufacturer's identification plate, specification marking, or on certification by the carrier. When a shipper performs a function covered by or having an effect on a

specification requirement of Part 178 or Part 179, the shipper must perform that function in accordance with the specification.

(b) Prior to each shipment of fissile radioactive materials, and Type B or large quantities of radioactive materials, the shipper shall notify the consignee of the dates of shipment and of expected arrival. The shipper shall also notify each consignee of any special loading/unloading instructions prior to his first shipment.

[Amdt. 173-3, 33 FR 14921, Oct. 4, 1968; Amdt. 173-14, 34 FR 17523, Oct. 30, 1969; Amdt. 173-94, 41 FR 16063, Apr. 15, 1976; Amdt. 173-100, 42 FR 2689, Jan. 13, 1977]

§ 173.22a Use of packagings authorized under exemptions.

(a) Except as provided in paragraph (b) of this section, no person may offer a hazardous material for transportation in a packaging the use of which is dependent upon an exemption issued under Subpart B of Part 107 of this title, unless that person is the holder of or a party to the exemption.

(b) If an exemption authorizes the use of a packaging for the shipment or transportation of a hazardous material by any person or class of persons other than or in addition to the holder of the exemption, that person or a member of that class of persons may use the packaging for the purposes authorized in the exemption subject to the terms specified therein. However, no person may use a packaging under the authority of this paragraph unless he maintains a copy of the exemption at each facility where the packaging is being used in connection with the shipment or transportation of the hazardous material concerned. Copies of exemptions may be obtained from the Office of Hazardous Materials Regulation, U.S. Department of Transportation, Washington, D.C. 20590, Attention: Docket Section.

[Amdt. 173-93, 41 FR 3478, Jan. 23, 1976]

§ 173.23 Previously authorized packaging.

(a) Where the regulations require Spec. 6D or 37M (§ 178.102 or § 178.134 of this subchapter) cylindrical steel overpacks, Spec. 5B, 6J, or 37A (single-trip container) (§ 178.82, § 178.100, or § 178.131 of this subchapter) metal drums manufactured before March 18, 1964, having inside Spec. 2S, 2SL, 2T, or 2TL (§ 178.21, § 178.27, § 178.35, or § 178.35a of this subchapter) polyethylene container, may be continued in use for the commodities and gross weights for which they were previously authorized.

(b) Reusable molded polyethylene containers for use without overpack complying with Spec. 34 (§ 178.19 of this subchapter), manufactured before September 5, 1966, may be continued in use, if they are plainly marked "ICC-34," and are embossed with the maker's name or symbol, rated capacity, and the month and year of manufacture.

[Amdt. 173-3, 33 FR 14921, Oct. 4, 1968, as amended by Amdt. 173-90, 39 FR 45240, Dec. 31, 1974; Amdt. 173-94; 41 FR 16063, Apr. 15, 1976]

§ 173.24 Standard requirements for all packages.

(a) Each package used for shipping hazardous materials under this subchapter shall be so designed and constructed, and its contents so limited, that under conditions normally incident to transportation—

(1) There will be no significant release of the hazardous materials to the environment;

(2) The effectiveness of the packaging will not be substantially reduced; and

(3) There will be no mixture of gases or vapors in the package which could, through any credible spontaneous increase of heat or pressure, or through an explosion, significantly reduce the effectiveness of the packaging.

(b) Materials for which detailed specifications for packaging are not set forth in this part must be securely packaged in strong, tight packages meeting the requirements of this section.

(c) Packaging used for the shipment of hazardous materials under this subchapter shall, unless otherwise specified or exempted therein, meet all of the following design and construction criteria:

(1) Each specification container must be marked as follows:

(i) In an unobstructued area with letters and numerals identifying the container specification (e.g., DOT-1A, DOT-17E-304HT, DOT-23G40). See § 178.0-2 of this subchapter.

(ii) The name and address or symbol of person making the mark specified in paragraph (c)(1)(i) of this section. Symbol letters, if used, must be registered with the MTB-TSC. Duplicate symbols are not authorized.

(iii) The markings must be stamped, embossed, burned, printed, or otherwise marked on the packaging to provide adequate accessibility, permanency, and contrast so as to be readily apparent and understood.

(iv) Unless otherwise specified, letters and numerals must be at least ½ inch high.

(v) Packaging which does not comply with the applicable specification listed in Parts 178 and 179 of this subchapter must not be marked to indicate such compliance (see § 178.0-2 and § 179.1 of this subchapter).

(2) Steel used shall be low-carbon, commercial quality steel. Stainless, open hearth, electric, basic oxygen, or other similar quality steels are acceptable. Steel sheets of specified gauges shall comply with the following:

Gauge No.	Nominal thickness (inches)	Minimum thickness (inches)
12	0.1046	0.0946
13	0.0897	0.0817
14	0.0747	0.0677
15	0.0673	0.0603
16	0.0598	0.0533
17	0.0538	0.0478
18	0.0478	0.0428
19	0.0418	0.0378
20	0.0359	0.0324
22	0.0299	0.0269
23	0.0269	0.0239
24	0.0239	0.0209
26	0.0179	0.0159
28	0.0149	0.0129
30	0.0120	0.0110

(3) Lumber used shall be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.

(4) Welding and brazing shall be performed in a workmanlike manner using suitable and appropriate techniques, materials, and equipment.

(5) Packaging materials and contents shall be such that there will be no significant chemical or galvanic reaction among any of the materials in the package.

(6) Closures shall be adequate to prevent inadvertent leakage of the contents under normal conditions incident to transportation. Gasketed closures shall be fitted with gaskets of efficient material which will not be deteriorated by the contents of the container.

(7) Nails, staples, and other metallic devices shall not protrude into the interior of the outer packaging in such a manner as to be likely to cause failures.

(8) The nature and thickness of the packaging shall be such that friction during transport does not generate any heating likely to decrease the chemical stability of the contents.

(9) Polyethylene used must be of a type compatible with the lading and must not be permeable to an extent that a hazardous condition could be caused during transportation and handling.

(d) For specification containers, compliance with the applicable specifications in Parts 178 and 179 of this subchapter shall be required in all details, except as otherwise provided in this subchapter.

[Amdt. 173-3, 33 FR 14921, Oct. 4, 1968, as amended by Amdt. 173-11, 34 FR 12589, Aug. 1, 1969; Amdt. 173-20, 35 FR 5560, Apr. 3, 1970; Amdt. 173-94, 41 FR 16063, Apr. 15, 1976; Amdt. 173-100, 41 FR 38180, Sept. 9, 1976; Amdt. 173-119, 43 FR 36446, Aug. 17, 1978]

§ 173.25 Authorized packages in outside containers.

(a) Authorized packages containing no corrosive liquids may be shipped when tightly packed in a strong outside fiberboard box or drum, wooden box, barrel or crate, metal barrel or drum, or overpack, meeting the requirements of §§ 173.21 and 173.24. The outside container must be marked with the proper shipping name and labeled as required by this subchapter for each hazardous material contained therein unless markings and labels

representative of each material in the outside container are visible. Packages required by the regulations in this subchapter to be marked "THIS SIDE UP" or "THIS END UP" must be packed in the outside container with their filling holes up and the outside container marked "THIS SIDE UP" or "THIS END UP" to indicate the upward position of closures. The outside container must also be marked "INSIDE PACKAGES COMPLY WITH PRESCRIBED SPECIFICATIONS" when specification packagings are required unless the specification markings on the inside packaging are visible.

(b) Authorized packages containing acids or other corrosive liquids except nitric acid, perchloric acid, or hydrogen peroxide, solution containing over 52 percent hydrogen peroxide by weight, may be shipped when tightly packed in a strong outside fiberboard or wooden box, wooden crate or overpack, meeting the requirements of §§ 173.21 and 173.24 provided such outside container shall not contain any other hazardous material except under the following conditions:

(1) As provided in §§ 173.242, 173.257, 173.258, 173.259, 173.260, 173.261, and 173.286.

(2) Electrolyte acid or alkaline corrosive battery fluid in packages prescribed in §§ 173.257 and 173.258 may be included in outside shipping containers with dry charged storage batteries when packed to prevent movement within the outside containers.

(3) The outside container must be marked with the proper shipping name and labeled as required by this subchapter for each hazardous material contained within unless the markings and labels representative of each material in the outside container are visible. The outside container must be marked "THIS SIDE UP" or "THIS END UP" to indicate the upward position of closures and also marked "INSIDE PACKAGES COMPLY WITH PRESCRIBED SPECIFICATIONS" when specification packagings are required unless the specification markings on the inside packagings are visible.

[29 FR 16671, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16063, Apr. 15, 1976]

§ 173.26 Quantity limitations.

(a) When quantity limitations are specified in Parts 170-189 of this subchapter by United States liquid measure or by avoirdupois weight it is authorized that quantities measured by the metric system may be substituted, up to but not exceeding 1 gallon for liquids and 10 pounds for solids, on the basis of 1 liter per quart specified and 500 grams per pound specified.

(b) When quantity limitations do not appear in the packaging requirements of this subchapter, the permitted gross weight or capacity authorized for a container to be offered for transportation is as shown in the container specification. (See also § 173.27.)

[29 FR 16671, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16064, Apr. 15, 1976]

§ 173.27 Aircraft quantity limitations.

(a) The maximum quantity of hazardous material that may be offered for transportation by air in a package that is required for the material by this subchapter may not exceed that quantity prescribed for the material in § 172.101 of this subchapter.

(b) When offered for transportation by air, the combined quantity of any one class of materials may not exceed the lowest maximum quantity prescribed in 172.101 of this subchapter for any one of the materials in that class contained in the same package that meets the minimum requirements for the material contained therein.

[Amdt. 173-94, 41 FR 16064, Apr. 15, 1976]

§ 173.28 Reuse of containers.

(a) Containers used more than once (refilled and reshipped after having been previously emptied) must be in such condition, including closure devices and cushioning materials, that they comply in all respects with the prescribed requirements for those containers. Repairs must be made in an efficient manner in accordance with requirements for materials and construction as prescribed in Parts 178 and 179 of this subchapter for new

containers, or as otherwise prescribed. Parts that are weak, broken, or otherwise deteriorated must be replaced.

(1) Retest of carboy packages must have been made by or for shippers, or their authorized agents, as required by applicable provisions of the specifications in Part 178 of this subchapter before carboys which are to be offered for transportation are filled.

NOTE 1: Tests not required by shipper who fills and ships or who reships filled carboys for one shipment only carboy packages which have been properly tested by another shipper or a duly authorized agency.

(b) Markings applied as prescribed by the specifications must be maintained in a legible condition.

(c) If, on account of painting or any other reason, the markings as prescribed for any container cannot be kept plain and legible, a metal plate, brazed or soldered, or otherwise securely fastened to the container, with a reproduction of the prescribed markings plainly stamped thereon, will be permitted.

(d) Containers previously used for the shipment of any hazardous material must have the old markings, including name of contents, addresses, and labels, if any, thoroughly removed or obliterated before being used for the shipment of other articles.

(e) Boxes previously used for high explosives containing a liquid explosive ingredient not contained in an inside metal container must not be again used for shipments of any character.

(f) Boxes that have been contaminated by liquid explosive composition must not again be used for shipments of any character.

(f) Kegs previously used for any chlorate must not be again used for shipments of any character.

(g) Metal kegs previously used for black powder not contained in an interior package must not be again used for shipment of any explosive.

NOTE 1: Because of the present emergency and until further order of the Department, metal kegs, previously used for the shipment of black powder not contained in an interior package, may be used provided the kegs are in good physical condition and are not liable to permit escape of contents during transportation. Empty kegs previously used for shipment of black powder must be entirely free of black powder on the inside and outside before being offered for transportation.

(h) Except as provided in paragraphs (m) and (n) of this section and paragraph (h)(1) of this section, single-trip containers made under specifications prescribed in Part 178 of this subchapter, from which contents have once been removed following use for shipment of any material, must not be used thereafter for shipment of hazardous materials.

(i) Single-trip containers inspected and tested prior to January 1, 1971, that have been approved for reuse by the Bureau of Explosives may be used until July 1, 1971, under the terms and conditions specified.

(j) Containers which are designated as nonreusable containers, marked NRC, and made under specifications prescribed in Part 178 of this subchapter, from which contents have once been removed following use for shipment of any article, must not be again used as shipping containers for explosives, flammable liquids, flammable solids, organic peroxides, oxidizers, corrosive liquids, or poisons, class B or C, as defined in this Part.

(j) Cylinders or other containers which are designated as nonrefillable or for single-trip use under the specifications prescribed in Part 178 of this subchapter, and from which contents have once been removed following use for the shipment of any article, must not be again used as shipping containers for compressed gases.

(k) Containers used for shipments of etching acid liquid, n.o.s. must not be reused for shipment of any commodity.

(l) Cylinders used in anhydrous hydrofluoric acid service must comply with the requirements of § 173.264(b)(1) and must not be used in any other service.

(m) Specifications 17C, 17E, and 17H steel drums (§§ 178.115, 178.116, 178.118 of this subchapter) from which contents have been removed, may be reused as prescribed in this part as packagings for shipment of flammable liquids, flammable solids, organic peroxides, oxidizers, poisons

covered by § 173.370, radioactive materials, and corrosive liquids covered by §§ 173.249 and 173.249a, only if the following requirements, in addition to the other requirements of this section, are complied with prior to each reuse:

(1) Each drum must be thoroughly cleaned to remove all residues and foreign matter, inspected for deterioration or defects, and returned to its original shape and contour. All closure devices and parts must be removed (if removable), inspected for defects, and replaced as necessary. Each open head cover gasket must be replaced. Any drum which shows evidence of deterioration (e.g., visible pitting; creases; significant reduction in parent metal thickness from rust, corrosion, or cleaning processes; metal fatigue; or other material defects) or which cannot be returned to its original shape and contour does not qualify for reuse.

(2) The entire surface of each closed-head drum (and after December 31, 1971, each open-head drum, except for its removable head and adjacent chime area) must be tested for leakage by constant internal air pressure. The leakage test must be conducted by submersion under water, by completely covering the surface with soap suds or oil, or by some other method that will be equally sensitive. The air pressure must be maintained for a period of time sufficient to permit a complete inspection for leaks. The minimum air pressure for the test must be as follows:

Specification No.	Capacity	Minimum test pressure p.s.i.
17C	All	15
17E	Over 12 gallons	7
	12 gallons or less	5
17H	Over 12 gallons	7
	12 gallons or less	5

If leaking, the drum does not qualify for reuse.

(3) Marking:

(i) All previous test markings, commodity identification markings, and labels must be removed.

(ii) The outside of each drum qualifying for reuse under this section must be marked on the body within 10 inches of the top head with the following information: "Tested" (or "Inspected" as appropriate), the month and year of the test (or inspection, if an open-head drum) and the DOT registration number of the reconditioner. For example:

TESTED 2/70

DOT R1001

The registration number required for this marking must be obtained from the Office of Hazardous Materials, Department of Transportation, Washington, D.C. 20590.

(iii) Markings must be in at least ¼-inch figures and letters on a contrasting background.

(iv) The printed marking of the month and year of test is not required if each is clearly indicated by other means, such as perforations on a decal.

(n) A single-trip packaging (STC) may be reused for the shipment of any corrosive solid, ORM-A, ORM-B, ORM-C, or any material not required by this subchapter to be shipped in a DOT specification packaging and paragraph (m) of this section does not apply to these materials.

(o) Any drum meeting one specification which has been altered to meet another specification must be capable of meeting the new specification in all respects.

(1) Each drum so altered must be inspected, tested, and marked in accordance with paragraph (m) of this section. In addition, the drum must—

(i) Bear the specification markings required by the specification under which it was originally manufactured, and

(ii) Bear both the old and the new specification identification in conjunction with the markings required by paragraph (m) of this section with the specification to which the drum is converted shown last, e.g., "17E/17H". For example:

17E/17H

TESTED 2/70

DOT R1001

[29 FR 18671, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

Subpart F—Corrosive Materials: Definition and Preparation

§ 173.240 Corrosive material; definition.

(a) For the purpose of this subchapter, a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact, or in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel.

(1) A material is considered to be destructive or to cause irreversible alteration in human skin tissue if when tested on the intact skin of the albino rabbit by the technique described in Appendix A to this Part, the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less.

(2) A liquid is considered to have a severe corrosion rate if its corrosion rate exceeds 0.250 inch per year (IPY) on steel (SAE 1020) at a test temperature of 130° F. An acceptable test is described in NACE Standard TM-01-69.

(b) If human experience or other data indicate that the hazard of a material is greater or less than indicated by the results of the tests specified in paragraph (a) of this section, the Department may revise its classification or make the material subject to the requirements of Parts 170-189 of this subchapter.

[Amdt. 173-61, 37 FR 5947, Mar. 23, 1972; as amended by Amdt. 173-74, 38 FR 20839, Aug. 3, 1973; Amdt. 173-94, 41 FR 16074, Apr. 15, 1976]

§ 173.241 Outage.

(a) The outage (ullage) for packagings containing corrosive liquids, when offered for transportation, must be in accordance with the following requirements:

(1) *General outage requirements.* Packagings must not be completely filled. The proper vacant space (outage) in a tank car or other shipping container depends on the coefficient of expansion of the liquid and the maximum increase of temperature to which it will be subjected in transit.

Outage must be calculated to the total capacity of the container.

(2) *Outage requirements for packagings of 110 gallons or less.* Sufficient outage must be provided so that the packaging will not be liquid full at 130° F. (55° C.).

(3) *Outage requirements for tank cars.* In tank cars, outage must be calculated to percentage of the total capacity of the tank, i.e., shell and dome capacity combined. If the dome of the tank car does not provide sufficient outage, then vacant space must be left in the shell to make up the required outage. The outage for tank cars must not be less than 2 percent, except that outage for Specification 103A, 103B, 103C, 103E, 103A-AL, 103C-AL, 103AW, 103BW, 103CW, 103EW, 103ANW, 103A-ALW, tank cars must not be less than 1 percent.

(4) *Outage requirements for cargo tanks or portable tanks.* No cargo tank or portable tank, or compartment thereof, used for the transportation of any corrosive liquid shall be completely filled. The outage for cargo tanks and portable tanks must be no less than 2 percent.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-61, 37 FR 5947, Mar. 23, 1972; Amdt. 173-94, 41 FR 16074, Apr. 15, 1976; Amdt. 173-114, 43 FR 8521, Mar. 2, 1978]

§ 173.242 Bottles containing corrosive liquids.

(a) Bottles containing corrosive liquids, as defined by § 173.240, may not be packed in the same package with any other hazardous material, except as specifically provided in paragraphs (b) and (c) of this section and §§ 173.25, 173.257, 173.258, 173.259, 173.260, 173.261, or 173.286.

(b) Bottles containing corrosive liquids cushioned by noncombustible, nonreactive absorbent material and securely packed in tightly closed metal packaging, except hydrofluoric acid which must be overpacked in a packaging other than one made of metal, may be packed with other hazardous materials. This exception does not apply to nitric acid exceeding 40-percent concentration, perchloric acid, hydrogen peroxide exceeding 52-percent strenght by weight, or nitrohydrochloric or nitrohydrochloric acid diluted, which may not be packed in the same package with any other article under any circumstances.

(c) Corrosive liquid solutions in securely closed bottles, in quantities necessary for preparing photographic processing mixtures and efficiently cushioned, may be packed in the same outside shipping container with required amounts of packaged chemicals not classed as hazardous materials by these regulations, provided no dangerous reaction would occur should the contents of bottles be mixed with the packaged chemicals. Marking prescribed in Part 172 of this subchapter is not required.

[Amdt. 173-105, 42 FR 28133, June 2, 1977 and Amdt. 173-118, 43 FR 31141, July 20, 1978]

§ 173.243 Closing and cushioning.

(a) All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed or in any case when necessary to prevent breakage or leakage.

[29 FR 18725, Dec. 29, 1964. Redesignated at FR 5606, Apr. 5, 1967]

§ 173.244 Limited quantities of corrosive materials.

(a) Limited quantities of corrosive materials for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter are excepted from labeling (except when offered for transportation by air) and specification packaging requirements when packed according to the following paragraphs. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) Corrosive liquids in bottles having a rated capacity not over 16 ounces by volume each enclosed in a metal can packed in strong outside packaging.

(2) Corrosive liquids in metal or plastic containers having a rated capacity not over 16 ounces by volume in strong outside packaging.

(3) Corrosive solids in earthenware, glass, plastic, or paper containers of not more than 5 pounds capacity each packed in metal, wooden or fiberboard outside packaging not exceeding 25 pounds net weight each.

(4) Corrosive solids in metal, rigid fiber or composition cans or cartons or rigid plastic containers; of not more than 10 pounds capacity each, overpacked in metal, wooden or fiberboard outside containers not exceeding 25 pounds net weight each.

(b) Special exceptions for shipment of certain corrosive materials in the ORM-D class are provided in Subpart N of this Part.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-61, 37 FR 5948, Mar. 23, 1972; Amdt. 173-77, 38 FR 35470, Dec. 28, 1973; Amdt. 173-94, 41 FR 16074, Apr. 15, 1976; Amdt. 173-94A, 41 FR 40682, Sept. 20, 1976; Amdt. 173-94B, 41 FR 57069, Dec. 30, 1976]

§ 173.245 Corrosive liquids not specifically provided for.

(a) Corrosive liquids, as defined in § 173.240, other than those for which special requirements are prescribed, must be packed in specification containers constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows:

(1) Specification 1A, 1B, 1C, or 1E (§§ 178.1, 178.2, 178.3, 178.7 of this subchapter). Glass carboys in boxes, kegs, or plywood drums. Not authorized for transportation by air.

(2) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Specification 1D (§ 178.4 of this subchapter). Boxed glass carboys of not over 6.5 gallons nominal capacity which must be closed, and when reused must be reconditioned and tested, as provided in the specification; means must be provided so that accumulated pressure in bottles may not exceed 10 pounds per square inch gauge at 130°F(55°c), or will vent at a pressure not to exceed 10 pounds per square inch gauge. Not authorized for transportation by air.

(4) Specification 5A, 5B, 5C, or 5M (§§ 178.81, 178.82, 178.83, 178.90 of this subchapter). Metal barrels or drums.

(5) Specification 5K (§ 178.88 of this subchapter). Nickel barrels or drums. Authorized only for commodities that will not react with nickel and result in container failure.

(6) [Reserved]

(7) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, or 178.190 of this subchapter). Wooden boxes with inside containers which must be glass, earthenware, polyethylene or other nonfragile plastic material (bags are not authorized), not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(8) Spec. 26 (§ 178.8 of this subchapter). Metal-jacketed lead carboys.

(9) Spec. 5D (§ 178.84 of this subchapter). Rubber lined metal barrels or drums. Any barrel or drum that shows evidence of damage must be tested before shipment for defects in lining in the manner prescribed in § 178.84-15(a) of this subchapter.

(10) Spec. 5H (§ 178.87 of this subchapter). Lead-lined metal barrels or drums.

(11) Spec. 43A (§ 178.18 of this subchapter). Rubber drums.

(12) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside containers of polyethylene, or other non-fragile plastic material resistant to the lading, and having threaded closures or other equally efficient type closure, not over 1 gallon capacity each, suitably cushioned to prevent movement within the box. Gross weight of complete package must not exceed 65 pounds.

(13) Spec. 15P or 22C (§ 178.182 or 178.198 of this subchapter). Glued plywood or wooden box, or plywood drum as prescribed by § 178.190-2(a) of this subchapter, with spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(14) Spec. 17C, 17E, or 17F (§§ 178.115, 178.116, or 178.117 of this subchapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter.

(15) Spec. 17H (§ 178.118 of this subchapter). Metal drums (single-trip). Authorized for viscous cleaning compounds, liquid, only.

(16) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with inside spec. 2S, 2SL, or 2U (§§ 178.35, 178.35a, 178.24 of this subchapter) polyethylene packaging.

(17) Specification 17H, 37A or 37B (§§ 178.118, 178.131, or 178.132 of this subchapter), metal drums (single-trip), with welded side seams, not over 5 gallons capacity each. Drums must be lined throughout with a pliable plastic material impervious to the lading. Specification 37A and 37B metal drums must be at least 24 gauge steel. Not authorized for transportation by air.

(18) Specification 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass, polyethylene, or other nonfragile plastic bottles not over 5-quart capacity each. Not more than 4 inside glass bottles exceeding 5-pint capacity each shall be packed in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(19) Specification 37P (§ 178.133 of this subchapter). Steel drum with polyethylene liner (non-reusable container). Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

(20) Specification 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside specification 2T, 2TL, 2S, or 2SL (§§ 178.21, 178.27, 178.35, 178.35a of this subchapter) polyethylene container. Not authorized for transportation by air.

(21) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with inside specification 2U (§ 178.24 of this subchapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(22) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185-22 of this subchapter) with inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(23) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles, not over 5 gallons capacity each, as specified by § 178.205-34 of this subchapter. Not more than one bottle shall be packed in one outside box.

(24) Spec. 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside spec. 2S, 2SL, or 2U (§§ 178.35, 178.35a, or 178.24 of this subchapter) polyethylene container.

(25) Spec. 12A or 12B (§§ 178.210 or 178.205 of this subchapter). Fiberboard boxes with inside aluminum containers not over 5 pounds capacity each. Aluminum containers must be approved by the Bureau of Explosives.

(26) Spec. 34 (§ 178.19 of this subchapter). Polyethylene container without overpack, not over 30-gallons capacity.

(27) Specification 33A (§ 178.150 of this subchapter). Polystyrene case (nonreusable container) with inside glass bottles not over 5-pint capacity each. Not more than four 5-pint bottles may be packed in one outside packaging.

(28) Cylinders as prescribed for any compressed gas, except acetylene. All cylinder valves must be protected by one of the methods described in § 173.301(g) (1), (2), or (3). See § 173.34(e)(16).

(29) Specification MC 303 or MC 304. Tank motor vehicle meeting § 178.343-2(c) of this subchapter. Specification MC 303 must have tanks fabricated from 12-gauge, Type 316 stainless

steel. MC 303 is authorized only for phosphoric acid and solutions thereof.

(30) Specification MC 307 (§§ 178.340, 178.342 of this subchapter). Tank motor vehicle meeting § 178.343-2(c) of this subchapter.

(31) Specification MC 306, MC 310, MC 311, or MC 312 (§§ 178.340, 178.341, 178.343 of this subchapter). Tank motor vehicles. If cargo tank is constructed with bottom outlets, they must meet § 178.343-5 of this subchapter. Specification MC 306 must have tanks fabricated from 12 gauge, Type 316 stainless steel. MC 306 is authorized only for phosphoric acid and solutions thereof.

(32) Specification 103AW, 103A-ALW, 103ANW, 103BW, 103CW, 103EW, 105A200ALW, 111A100F2, 111A60ALW2, 111AG0W2, 111AG0W5 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars. Specification 105A200ALW tank cars authorized only for acetic anhydride.

(33) Specification 103ALW, 103DW, 103W, 104W, 111A60ALW1, 111A60W1, 111A100W3, 111A100W6, 115A60W6, or AAR206W (§§ 179.200, 179.201, 179.220 of this subchapter). Tank cars. (See Note 1.)

NOTE 1: Authorized only on an interim basis pending the Department's decision on use of bottom outlets for tank cars containing hazardous materials.

(34) Specification 42B (§ 178.107 of this subchapter). Aluminum drum.

(b) Except when transportation by aircraft or vessel is involved, a material classed as a corrosive material that is corrosive only to steel and does not meet the definition of any other hazard class defined in this subchapter, is excepted from the requirements of this subchapter for rail or highway when transported in a portable tank, cargo tank, or tank car constructed of materials that will not react dangerously with or be degraded by the material being transported.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

NOTE: For amendments to § 173.245 see List of CFR sections affected in back of this volume.

§ 173.245a Corrosive liquids, n.o.s. shipped in bulk.

(a) Corrosive liquids, n.o.s. which are listed in the following table, may not be shipped in bulk unless they are packaged as follows:

Corrosive liquid	Authorized tank car	Authorized portable tank[3]
Dichlorobutene and Dichlorobutene mixtures.	105A300W, 112A340W	....
Ethyl chlorothioformate.	.....	DOT-51 monel or monel-clad.
Ethyl phosphonothioic dichloride, anhydrous.	103AW, 111A60W2	DOT-51.
Ethyl phosphonous dichloride, anhydrous.	.....	DOT-51.
Ethyl phosphorodichloridate.	103ANW, 103AW, 111A100F2, 111A100W2[1].	....
Methyl phosphonothioic dichloride, anhydrous.	103AW.....	DOT-51.
Methyl phosphonous dichloride.[2]	.....	DOT-51.
Vanadium oxytrichloride and titanium tetrachloride mixture.		DOT-51 monel or monel clad. DOT-51.

[1] In an unlined tank, must be loaded and shipped under a blanket of nonflammable, dry, inert gas, adequate to displace any significant amount of air.

[2] Specification 103ANW tank car tank must be solid nickel at least 95 percent pure; all cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 99.7 percent. Specification 103A tank car tanks must be lead-lined steel or must be made of steel at least 10 percent nickel clad; specification 103AW, 111A100F2, or 111A60W2 tank must be lead-lined steel or made of steel with a minimum thickness of nickel cladding 1/16 inch; nickel cladding in tanks must have a minimum nickel content at least 99 percent pure nickel.

[3] Tank must be equipped with a safety-relief valve set at not less than 100 psig. In addition, the relief valve must comply with § 173.315(f)(1).

(b) Corrosive liquids, n.o.s., except those listed in paragraph (a) of this section, when shipped in bulk, must be packaged as prescribed by § 173.245.

[Amdt. 173-57, 36 FR 21288, Nov. 5, 1971, as amended by Amdt. 173-74, 38 FR 20839, Aug. 3, 1973; Amdt. 173-80, 39 FR 15035, Apr. 30, 1974; Amdt. 173-118, 43 FR 31141, July 20, 1978; 43 FR 35485, Aug. 10, 1978]

§ 173.245b Corrosive solids not specifically provided for.

(a) Corrosive solids, as defined in § 173.240, other than those for which special requirements are prescribed,

must be packaged in containers fully complying with § 173.24, as follows:

(1) Metal, wooden, or fiberboard box or case with inside containers which must be earthenware, glass, metal, plastic, or fiber or composition board of not more than 10 pounds net weight capacity each.

(2) Fiberboard box with inside paper bags, not over 50 pounds total net capacity. When shipped by water, each box must include a moisture barrier.

(3) Fiberboard box with one inside plastic bag of not over 120 pounds net weight capacity.

(4) Metal drum.

(5) Fiber drum not exceeding 550 pounds net weight and not over 65-gallon capacity. When shipped by water, each drum must include a moisture barrier.

(6) Plastic drum or pail not exceeding 80 pounds net weight and not over 7-gallon capacity.

(7) Bag: Each bag filled to weight with product and closed as for shipment must be capable of withstanding four drops from a height of 4 feet onto a solid surface, one drop on each end and one drop on each face, without sifting or rupture. Authorized net weight not to exceed 110 pounds. When shipped by water, each bag must include a moisture barrier.

(8) Metal portable tank or closed bin not over 7,000 pounds gross weight.

(9) Fiberglass or rubber tank or closed bin of not over 74-cubic-foot capacity.

(10) Metal sift-proof cargo tank or tank car, or hopper-type or pneumatic bulk vehicle.

[Amdt. 173-61, 37 FR 5948, Mar. 23, 1972, as amended by Amdt. 173-74, 38 FR 20839, Aug. 3, 1973; Amdt. 173-105, 42 FR 28133, June 2, 1977; Amdt. 173-107, 42 FR 42207, Aug. 22, 1977; Amdt. 173-120, 43 FR 39791, Sept. 7, 1978]

§ 173.246 Antimony pentafluoride, bromide, pentafluoride, iodine pentafluoride, bromine trifluoride, and chlorine trifluoride.

(a) Antimony pentafluoride must be chemically anhydrous. Materials cited in the heading of this section must be packed in specification packagings as follows:

(1) Specification 3A150, 3AA150, 3B240, 3BN150, 4B240, 4BA240, 4BW240, or 3E1800 (§§ 178.36, 178.37, 178.38, 178.39, 178.50, 178.51, 178.61, 178.42 of this subchapter). Cylinders. Each valve outlet must be sealed by a threaded cap or a threaded plug. Cylinder valves must be protected as specified for corrosive gases in § 173.301(g). No cylinder may be equipped with any safety relief device. Specification 3E1800 cylinders must be packaged in accordance with the requirements of § 173.301(k).

(2) Specification 106A500X or 110A500W (§§ 179.300, 179.301 of this subchapter). Tanks. Authorized for iodine pentafluoride and chlorine trifluoride only. Each tank must be equipped with a valve protection cover and with solid steel plugs in place of fusible plug safety devices. No tank may be equipped with any safety relief device.

[Amdt. 173-81, 39 FR 17318, May 15, 1974]

§ 173.248 Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid.

(a) Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid, resulting from the use of sulfuric acid in various processes, not containing hydrofluoric acid, must be packaged as follows:

(1) Specification 1A, 1D, or 1E (§§ 178.1, 178.4, 178.7 of this subchapter). Carboys in boxes or plywood drums. Authorized only for spent sulfuric acid. Not authorized for transportation by air.

(2) Spec. 1X (§ 178.5 of this subchapter) Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185 or 178.190 of this subchapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(4) Specification 103A,[1] 103AW, 111A60W2, or 111A100F2 (§§ 179.200 and 179.201 of this subchapter). Tank cars, provided the product is sufficiently liquid to be unloaded through the dome or manway. Tanks which do not contain products or contaminants that give off noxious or flammable vapors may be equipped with safety vents incorporating lead discs having a ⅛-inch breather hole in the center thereof.

(5) Spec. 103,[1] 103-W, 111A60-F-1, or 111A60-W-1 (§§ 179.200 and 179.201 of this subchapter). Tank cars, provided the product is too viscous to be unloaded through the dome or manway. Tanks which do not contain products or contaminants that give off noxious or flammable vapors may be equipped with safety vents incorporating lead discs having a ⅛-inch breather hole in the center thereof.

(6) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Tank motor vehicles.

(7) Spec. 60 (§ 178.255 of this subchapter). Portable tanks.

[29 FR 18726, Dec. 29, 1964, as amended by Or 71, 31 FR 9070, July 1, 1966; Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-70, 39 FR 15036, Apr. 30, 1974; Amdt. 173-94, 41 FR 16075, Apr. 15, 1976]

§ 173.249 Alkaline corrosive liquids, n.o.s.; Alkaline liquids, n.o.s.; Alkaline corrosive battery fluid; Potassium fluoride solution; Potassium hydrogen fluoride solution; Sodium aluminate, liquid; Sodium hydroxide solution; Potassium hydroxide solution; Boiler compound, liquid, solution.

(a) Alkaline corrosive liquids, n.o.s.; Alkaline liquids, n.o.s.; Alkaline corrosive battery fluid; Potassium fluoride solution; Potassium hydrogen fluoride solution; Sodium aluminate, liquid; Sodium hydroxide solution; Potassium hydroxide solution; Boiler compound solution when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein as follows:

(1) In containers prescribed in § 173.245.

(2) Spec. 15A, 15B, 15C, 16A, or 19A (§ 178.168, 178.169, 178.170, 178.185, or 178.190 of this subchapter). Wooden boxes with glass or earthenware inside containers, not over 2 gallons each, or with metal inside containers, not over 5 gallons each.

(3) Specification 5 (§ 178.80 of this subchapter) metal drums. Openings must not exceed 2.3 inches in diameter.

(4) Spec. 17H (§ 178.118 of this subchapter). Metal drums (single-trip). Authorized only for liquid boiler compounds or liquid water treatment compounds.

(5) Specification 103,[1] 103W, 103A,[1] 103AW, 103B,[1] 103BW, 104,[1] 104W, 105A100,[1] 105A100W, 111A60F1, 111A60W1, 111A60W2, 111A100F2, 111A60W5, or 111A100W4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars.

(6) Specification MC 303, MC 310, MC 311 or MC 312 (§ 178.343 of this subchapter). Tank motor vehicles. Specification MC 303 is authorized for alkaline corrosive liquids, n.o.s., and alkaline liquids, n.o.s. only and is not authorized for transportation by water.

(7) Specification 57 or 60 (§§ 178.253, 178, 178.255 of this subchapter). Portable tanks. Specification 57 portable tank not authorized for transportation by water.

(8) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with glass inside containers of not over 16 ounces capacity each.

(9) [Reserved]

(10) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes, with not more than one glass inside container not over 1 gallon capacity containing sodium hydroxide solution not over 25 percent strength and packed in a strong fiberboard box. Dry chemicals for photographic development process not classed as dangerous articles, contained in suitable inside packages, may be packed in the same outside box. The marking requirements of § 173.312 of this subchapter, shall not apply.

(11) Spec. 29 (§ 178.226 of this subchapter). Mailing tubes, with not more than one inside polyethylene bottle not over 1-quart capacity each.

(12) Spec. 1H (§ 178.13 of this subchapter). Metal crate with inside polyethylene container spec. 2T (§ 178.21 of this subchapter).

(13) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with inside metal containers. Not more than four 1-gallon or six 1-quart containers may be packed in each box. Maximum gross weight may not exceed 65 pounds and the completed package must meet the test requirements of § 178.210-10 of this subchapter.

(b) Alkaline corrosive liquids, n.o.s., alkaline liquids, n.o.s., alkaline corrosive battery fluids, and liquid sodium aluminate, when offered for transportation by aircraft, must be packaged as

[1]The use of existing tanks authorized but new construction not authorized.

[1]See footnote on previous page.

follows (also authorized for transportation by rail freight, highway, or water):

(1) In packagings as prescribed in paragraphs (a)(8), (10), and (11) of this section and § 173.245(a)(7) and (12).

(2) Spec. 5 or 5A (§ 178.80 or 178.81 of this subchapter). Metal barrels or drums, capacity not exceeding 10 gallons, with openings not exceeding 2.3 inches in diameter.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§ 178.168, 178.169, 178.170, 178.185, or 178.190 of this subchapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon each, or with metal cans not over 5 gallons each.

(c) Limited quantities of alkaline corrosive liquids, n.o.s., alkaline liquids, n.o.s., alkaline corrosive battery fluids, and liquid sodium aluminate in inside packagings of not more than 8 fluid ounces capacity each, packed in strong outside packagings, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except labeling is required for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(d) Special exceptions for shipment of certain alkaline in the ORM-D class are provided in Subpart N of this part.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

Note: For amendments to § 173.249 see the list of CFR sections affected in the back of this volume.

§ 173.249a Cleaning compound, liquid; Coal tar dye, liquid; Dye intermediate, liquid; Mining reagent, liquid; and Te tile treating compound mixture, liqu

(a) A liquid cleaning compound su ject to this section must not conta any corrosive material specifical named in § 172.101 of this subchapt except phosphoric acid, acetic acl and not over 15 percent sodium or p tassium hydroxide.

(b) A liquid dye intermediate is a ring compound, containing amino, hydroxy, sulfonic acid, or quinone group or a combination of these groups, used in the manufacture of dyes, and not otherwise specifically named in § 172.101 of this subchapter.

(c) A liquid textile treating compound mixture is a mixture used to treat woven, knit or otherwise manufactured fabrics. It does not include mixtures used only to treat fibers, filaments, or yarn used in making the fabric.

(d) Liquid coal tar dye, liquid cleaning compound, liquid dye intermediate liquid mining reagent, and liquid textile treating compound mixture must be packaged as follows:

(1) In specification packagings as prescribed in § 173.245.

(2) In packagings meeting all of the specific requirements prescribed in § 173.245 including packaging type and quantity limitations for inside packagings. The packagings are not required to meet the detailed specification requirements of Part 178 of this subchapter except that size and weight limitations for package types as prescribed in Part 178 may not be exceeded. Not authorized for shipment by aircraft.

(3) Removable (open) head fiber drum lined or coated on the inside with a plastic material, not over 55-gallon capacity. Not authorized for shipment by aircraft.

(4) Removable (open) head metal drum, not over 55-gallon capacity. Not authorized for shipment by aircraft.

(5) Removable (open) head polyethylene drum, not over 6.5-gallon capacity. Not authorized for shipment by aircraft.

[Amdt. 173-77, 38 FR 35471, Dec. 28, 1973, as amended by Amdt. 173-121, 43 FR 48644, Oct. 19, 1978]

§ 173.263 Hydrochloric (muriatic) acid; hydrochloric (muriatic) acid mixtures; hydrochloric (muriatic) acid solution, inhibited; sodium chlorite solution (not exceeding 42 percent sodium chlorite); and cleaning compounds, liquids, containing hydrochloric (muriatic) acid.

(a) Hydrochloric (muriatic) acid, hydrochloric (muriatic) acid mixtures, hydrochloric (muriatic) acid solution, inhibited, sodium chlorite solution not exceeding 42 percent sodium chlorite, and cleaning compounds, liquid, containing hydrochloric (muriatic) acid must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, or 178.190 of this subchapter). Wooden boxes with inside containers which must be glass, earthenware, polyethylene or other nonfragile plastic material resistant to the lading (bags are not authorized), not over 1 gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in each outside container.

(2) Spec. 5D (§ 178.84 of this subchapter). Rubber-lined metal barrels or drums. Any such container that shows evidence of damage must be tested, before shipment, for defect in lining in the manner prescribed in spec. 5D.

(3) Spec. 43A (§ 178.18 of this subchapter). Rubber drums.

(4) [Reserved]

(5) Specification 1A, 1C, or 1K (§§ 178.1, 178.3, 178.14 of this subchapter). Carboys in boxes or kegs. Not authorized for transportation by air.

(6) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(7) Specification 1D, 1E, or 1EX (single-trip) (§§ 178.4, 178.6, 178.7 of this subchapter). Glass carboys in boxes or plywood drums, of not over 6.5 gallon nominal capacity. Means must be provided so that accumulated total pressure in bottle may not exceed 10 p.s.i.g. at 130° F. (55° C.) or will vent at a pressure not to exceed 10 p.s.i.g. Not authorized for transportation by air.

(8) [Reserved]

(9) Specification 103B,[1] 103BW, or 111A60W5 (§§ 179.200, 179.201 of this subchapter). Tank cars. Authorized for acid not over 38 percent strength by weight. A safety vent of approved design equipped with frangible disc having ¼-inch breather hole in center thereof or a safety vent of approved design equipped with carbon discs permitting continuous venting may be used, but may not be used for hydrochloric (muriatic) acid of 22° Baume strength, and other fuming acids.

(10) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Tank motor vehicle lined with rubber or equally acid-resistant material of equivalent strength and durability. An unlined specification MC 311 or MC 312 tank motor vehicle made from Type 304L or 316 stainless steel is authorized for sodium chlorite solutions not exceeding 42 percent sodium chlorite only.

(11) Spec. 60 (§ 178.255 of this subchapter). Portable tanks, rubber-lined.

(12) Specification 103CW, 111A60W7 (§§ 179.200 and 179.201 of this subchapter). Tank cars having tanks of type 304L stainless steel. Authorized for sodium chlorite solution not exceeding 42 percent sodium chlorite only.

(13) Spec. 1H, 15P, or 22C (§§ 178.13, 178.182, or 178.198 of this subchapter). Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside spec. 2T or spec. 2TL (§§ 178.21 or 178.27 of this subchapter) polyethylene container.

(14) Specifications 17H, 37A, or 37B (§§ 178.118, 178.131, 178.132, of this subchapter). Metal drums (single-trip) not over 5 gallons capacity each. Authorized only for 15 percent or less, inhibited hydrochloric (muriatic) acid solution. Drums must be lined throughout with a pliable plastic material impervious to the solution. Specifications 37A and 37B metal drums must be at least 24 gauge steel. Not authorized for transportation by air.

(15) Specification 12A or 12B (§§ 178.210, 178.205 of this subchapter). Fiberboard boxes with inside containers of polyethylene, or other nonfragile plastic material resistant to the lading (bags are not authorized), not over 1-gallon capacity each, or not more than one of 3-gallon capacity, suitably cushioned to prevent movement within the box. Gross weight of completed package must not exceed 65 pounds.

(16) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint glass bottles may be packed in one outside container. Shipper must have estab-

[1] The use of existing tanks authorized but new construction not authorized.

lished that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(17) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with inside Specifications 2S, 2SL, 2T, 2TL, or 2U (§§ 178.35, 178.35a, 178.21, 178.27, 178.24 of this subchapter) polyethylene container.

(18) Specification 37P (§ 178.133 of this subchapter). Steel drums constructed of at least 24-gauge metal for drums exceeding 1 gallon capacity, with polyethylene liner (nonreusable container). Not authorized for transportation by air.

(19) Spec. 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside spec. 2T, 2TL, 2S, or 2SL (§§ 178.21, 178.27, 178.35, or 178.35a of this subchapter) polyethylene container.

(20) [Reserved]

(21) Spec. 12C (§ 178.206 of this subchapter). Fiberboard boxes with inside 5-gallon nominal capacity polyethylene bottles having minimum wall thickness of 0.015 inch and constructed with screw-type closures. Authorized gross weight not over 65 pounds. (See § 178.206-19 of this subchapter.)

(22) Spec. 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside spec. 2T, 2S, 2SL, or 2U (§§ 178.21, 178.35, 178.35a, or 178.24 of this subchapter) polyethylene container.

(23) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with inside specification 2U (§ 178.24 of this subchapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(24) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185-22 of this subchapter) with inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(25) Spec. 22C (§ 178.198 of this subchapter). Plywood drum as prescribed by § 178.198-2(b), with inside spec. 2TL (§ 178.27 of this subchapter) polyethylene container not over 5 gallon nominal capacity.

(26) Spec. 33A (§ 178.150 of this subchapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packed in one outside container.

(27) Specification 12R (§ 178.212 of this subchapter). Paper-faced expanded polystyrene board box with not more than six inside glass bottles or specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles, not over 5 pints capacity each.

(28) Spec. 34 (§ 178.19 of this subchapter). Polyethylene container without overpack, not over 30-gallons capacity.

(29) Specification 12R (§ 178.212 of this subchapter). Paper-faced expanded polystyrene board box with not more than four specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles, not over 1-gallon capacity each.

(b) Hydrochloric acid of not over 20 percent strength (13.25° Baumé) and other corrosive liquids containing not over 20 percent hydrochloric acid in addition to containers prescribed in paragraph (a) of this section may be shipped in specification containers as follows:

(1) [Reserved]

(2) Limited quantities of these materials in inside packaging of not more than 8 fluid ounces capacity each, packed in strong outside packagings, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter, except § 177.817.

(c) When hydrochloric acid contains oils or solvents it must not be shipped in containers or tank cars lined with rubber.

(d) Hydrochloric acid mixtures of not over 28 percent strength, or cleaning compounds, liquid, containing not over 28 percent hydrochloric (muriatic) acid, in addition to the provisions of paragraphs (a) and (b) of this section, may be packed in specification containers as follows:

(1) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 275-pound test (Mullen or Cady) double-wall corrugated fiberboard or 325-pound test (Mullen or Cady) double-faced corrugated fiberboard, with not more than 12 inside glass bottles, having acid-proof closures, of not over 32 ounces capacity each. Inside glass bottles must be separated and cushioned by suitable corrugated fiberboard partitions. The box must be equipped with top and bottom pads. (See § 178.205-32 of this subchapter.)

(2) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 1 gallon capacity each. Not more than 4 inside containers exceeding 5 pints capacity each shall be in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(e) Special exceptions for the shipment of certain dilute hydrochloric acid solutions in the ORM-D class are provided in Subpart N of this part.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

NOTE: For amendments to § 173.263 see the List of CFR sections affected in the back of this volume.

§ 173.264 Hydrofluoric acid; White acid.

(a) Hydrofluoric acid and white acid (ammonium bifluoride and hydrochloric acid mixture), each must be packed in specification packaging as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, or 178.190 of this subchapter). Wooden boxes with inside containers of natural rubber, ceresine, lead, or other hydrofluoric acid resistant material. These containers are authorized only for strengths of acid for which they are adequate, but in no case may the strength of acid exceed 70 percent.

(2) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles or inside receptacles of not over 1 pound capacity each, made of natural rubber, lead, or other hydrofluoric resistant plastic. Authorized only for acid not over 70 percent in strength.

(3) Spec. 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside spec. 2T (§ 178.21 of this subchapter) polyethylene container. Authorized for hydrofluoric acid not over 70 percent strength.

(4) Specification 12A or 12B (§§ 178.210, 178.205 of this subchapter). Fiberboard boxes with not more than four Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles, having a minimum thickness of 0.030 inch and not over 1 gallon (nominal) capacity each. Bottle closures must be made secure by sealing with pressure-sensitive plastic tape or other equally efficient means. Authorized for acid not over 70 percent strength. Authorized gross weight for Specification 12B fiberboard boxes not over 65 pounds; Specification 12A not over 80 pounds.

(5)-(6) [Reserved]

(7) Spec. 5A (§ 178.81 of this subchapter). Unlined metal barrels or drums which have been subjected to adequate passivation or neutralization process (see Note 1). Authorized only for acid of not less than 60 percent and not more than 80 percent strength and all containers must be filled to not over 80 percent of capacity at 68° F. If containers are washed out with water, they must be repassivated before reshipment. (See Notes 1, 2, 3 and 5.)

NOTE 1: Each metal container, before being put into service must be passivated by an efficient method.

NOTE 2: Containers not exceeding 55 gallons capacity each are authorized for carload, truckload, less-than-carload, and less-than-truckload shipment. Containers exceeding 55 gallons capacity each are authorized for carload or truckload shipments only

but they must be loaded by consignor and unloaded by consignee.

NOTE 3: For less-than-carload or less-than-truckload shipments, containers must be of metal at least as heavy as 14 gauge United States standard for not over 20 gallons capacity each or 12 gauge for not over 55 gallons capacity each. Each container must be subjected to at least one of the following tests before shipment: By interior pressure of at least 15 pounds per square inch before filling or by holding for inspection for at least 24 hours after filling. In either case, each container must be vented prior to shipment.

NOTE 4: [Reserved]

NOTE 5: Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent, when shipped in unlined steel containers, must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(8) Specification 103A,[1] 103AW, 105A100, 105A100W, 111A100F2, 111A60W2, 111A100W4, or ARA-IV[1] (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Unlined metal tanks which have been subjected to adequate passivity or neutralization process. (See Note 1 to paragraph (a)(7) of this section.) Authorized only for hydrofluoric acid of 60 to 80 percent strength. If tanks are washed out with water they must be resubjected to passivity before reshipment.

(i) Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent when shipped in unlined metal tank cars must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(ii) Each tank car must be marked "HYDROFLUORIC ACID" in accordance with the requirements of § 172.330 of this subchapter.

(9) Spec. 43A (§ 178.18 of this subchapter). Rubber drums. Authorized only for acid not over 65 percent strength. Any such container showing evidence of damage must be tested to 20 pounds hydrostatic pressure, without leakage, before using.

(10) Spec. 5D (§ 178.84 of this subchapter). Lined metal barrels or drums. Authorized only for acid not over 62 percent strength. Any barrel or drum that shows evidence of damage must be tested before shipment for defects in lining in the manner prescribed in § 178.84-15(a) of this subchapter. Lining materials must meet the test prescribed in Notes 1, 2, and 3 below.

NOTE 1: Performance test. Test panels of linings for drums in hydrofluoric acid service must be subjected to a test in 62 percent hydrofluoric acid for a period of not less than 90 days. At the end of such period there must be no signs of deterioration of such lining material from chemical attack as evidenced by changes in its physical characteristics, and no signs of permeation of hydrofluoric acid through the sample as evidenced by blistering from the metal insert.

NOTE 2: Method of test. The test panel should be at least 2 inches by 6 inches with a steel insert completely covered by lining material. Test panels should be immersed in 62 percent hydrofluoric acid so that 50 percent of the panel is in contact with liquid and 50 percent in contact with vapor. Temperature of test to be maintained at 130° F. for the entire 90 days.

NOTE 3: Drums must be lined with material at least as thick as the sample material tested.

(11) Specification 103B,[2] 103BW, 111A100W4, or 111A60W5 (§§ 179.200, 179.201 of this subchapter). Tank cars, rubber-lined tanks. Authorized only for acid not over 40 percent strength except Specification 111A100W4 tanks are authorized only for acid of 70 percent strength.

(12)–(13) [Reserved]

(14) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Tank motor vehicles.

NOTE 1: Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent, when shipped in unlined tank motor vehicles, must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(15) [Reserved]

(16) Spec. 15P or 22C (§§ 178.182 or 178.198 of this subchapter). Glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside spec. 2T (§ 178.21 of this subchapter) polyethylene container. Authorized for acid not over 70 percent strength.

(17) Specification 6D (§ 178.102 of this subchapter) or 37M (nonreusable) (§ 178.134 of this subchapter) cylindrical steel overpacks with inside specifications 2S, 2SL, or 2T (§§ 178.35, 178.35a, 178.21 of this subchapter) polyethylene liners. Specification 37M overpack of over 15-gallon capacity must be constructed of at least 20-gauge steel. Authorized only for acid of not over 70 percent strength.

(18) Specification 34 (§ 178.19 of this subchapter). Polyethylene container without overpack, not over 5-gallon capacity. Authorized only for hydrofluoric acid not over 52 percent strength.

(19) Spec. 12P (§ 178.211 of this subchapter). Fiberboard boxes with one inside spec. 2TL (§ 178.27 of this subchapter) polyethylene bottle with screw-cap closure and having minimum wall thickness of 0.015 inch, not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes when any such staple is in direct contact with the inside plastic container. Authorized only for acid of 48 to 52 percent strength.

(b) Hydrofluoric acid, anhydrous (hydrogen fluoride) must be shipped in specification containers as follows:

(1) Specification 3[2], 3A, 3AA, 3B, 3C, 3E, 4, 4A, 25[2], or 38[2] (§§ 178.36, 178.37, 178.38, 178.40, 178.42, 178.48, 178.49 of this subchapter); also specification 4B, 4BA, 4BW or 4C (§§ 178.50, 178.51, 178.61, 178.52, of this subchapter) if not brazed. Cylinders. Filling density must not exceed 85 percent of the pounds water weight capacity of the cylinder. Cylinders used exclusively in this service may, in lieu of the periodic hydrostatic retest required by § 173.34(e), be given a complete external visual inspection at the time such periodic retest becomes due. Such inspections shall be made only by competent persons and shall be made on cylinders cleaned to bare metal and results recorded on a suitable data sheet, completed copies of which shall be kept as prescribed in § 173.34(e)(5). Points to be checked and recorded on these data sheets are: Date of inspection (month and year; DOT specification number; cylinder identification (registered symbol and serial number, date of manufacture, and if needed for adequate identification, ownership symbol); tare weight; physical condition (record specifically, if present; leakage, corrosion, gouges, dents or digs in shell or heads, broken or damaged footring or protective ring or fire damage); disposition of cylinders (returned to service, to cylinder manufacturer for repairs, or scrapped). A cylinder which passes the inspection prescribed shall have the data recorded in the manner presently prescribed for the recording of the retest date except that an "E" is to follow the date (month and year) indicating requalification by the external inspection method. Cylinders removed from this service for any reason must be rendered unfit for any other regulatory service (see § 173.28(i)).

(2) Specification 105A300W, 112A400W, 114A400W, or ARA-V[2] (§§ 179.100, 179.101 of this subchapter). Tank cars equipped with special valves and appurtenances approved for this particular service. Filling density must not exceed 90 percent of the pounds water weight capacity of the tank. For Specification 114A400W tanks, valves and fittings must be located on top of the tank. Bottom openings in tank prohibited.

(i) Each tank car must be marked "HYDROGEN FLUORIDE" in accordance with the requirements of § 172.330 of this subchapter.

(3) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Tank motor vehicles.

(4) Spec. 51 (§ 178.245 of this subchapter). Portable tanks.

(5) [Reserved]

(6) Specification 106A500X or 110A500W (§§ 179.300, 179.301 of this subchapter) tanks. Tanks may not be equipped with safety devices of any type and valves must be protected by metal caps. Tanks may not be filled to a density in excess of 85 percent of the water weight capacity of the tank. (See § 177.834(m) of this subchapter for special requirements for highway shipments.)

(c) Containers must not be entirely filled. Unless otherwise provided in this part, sufficient outage (vacant

[1] The use of existing tanks authorized but new construction not authorized.

[2] Use of existing tank cars authorized, but new construction not authorized.

[2] See footnote on previous page.

space) must be allowed so that the liquid portion will not completely fill the container at 130° F. in order to prevent leakage or distortion of containers due to the expansion of the contents from increase in temperature during transit.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

NOTE: For amendments to § 173.264 see List of CFR sections affected in the back of this volume.

§ 173.354 Motor fuel antiknock compound or tetraethyl lead.

(a) Motor fuel antiknock compound (a mixture of one or more organic lead compounds such as tetraethyl lead, triethylmethyl lead, diethyldimethyl lead, ethyltrimethyl lead, and tetramethyl lead, with one or more halogen compounds such as ethylene dibromide and ethylene dichloride, hydrocarbon solvents or other equally efficient stabilizers) or tetraethyl lead must be packed in specification containers as follows:

(1) Spec. 15A (§ 178.168 of this subchapter). Wooden boxes with inside glass or earthenware containers of not over 1 pint capacity each, or metal cans, inclosed in hermetically sealed (soldered) metal cans, spec. 2A (§ 178.20 of this subchapter).

(2) Spec. 5 or 5A (§§ 178.80 or 178.81 of this subchapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(3) Cylinders as prescribed for any compressed gas, except acetylene.

(4) Specification 105A300-W (§§ 179.100 and 179.101 of this subchapter). *Tank car.* Each tank car must be marked "MOTOR FUEL ANTIKNOCK COMPOUND" in accordance with the requirements of § 172.330 of this subchapter. Tank car not authorized for tetraethyl lead. Openings in tank heads to facilitate application of nickel lining are authorized on tank cars constructed before January 1, 1975. These openings must be closed in an approved (§ 179.3 of this subchapter) manner.

(5) Specification MC 330 or MC 331 (§ 178.337 of this subchapter) (see Note 1). Tank motor vehicles. Authorized for motor fuel antiknock compound only.

NOTE 1: Spec. MC 300, MC 301,[1] MC 302 or MC 303 (§§ 178.321, 178.323, or 178.324 of this chapter) tank motor vehicles in motor fuel antiknock compound service prior to October 1, 1955 may be continued in service.

(6) Spec. 51 (§ 178.245 of this subchapter). Portable tanks having a minimum design pressure of 100 pounds per square inch. Authorized for motor fuel antiknock compound only.

(7) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed on at least 375-pound test (Mullen or Cady) solid fiberboard with inside metal cans enclosed in hermetically sealed (soldered) metal cans, not over 5 pounds capacity each. Each inside metal container must be enclosed in a taped, double-faced corrugated liner constructed of at least 200-pound test (Mullen or Cady) fiberboard and fitted with die-cut end caps constructed of at least 200-pound test (Mullen or Cady) double-walled corrugated fiberboard. Authorized gross weight not over 90 pounds.

(b) Outage must be sufficient to prevent any container from becoming entirely filled with liquid at 130° F.

(c) Steel tank conforming or equivalent to ASME specifications which contain solid or semisolid residual motor fuel antiknock compound (including rust, scale, or other contaminants) may be shipped by rail freight or highway. The tank must have been designed and constructed to be capable of withstanding full vacuum. All openings must be closed with gasketed blank flanges or vapor tight threaded closures. Each tank must be secured and braced to prevent movement under conditions normally incident to transportation

[1] Use of existing cargo tanks authorized, but new construction not authorized.

[29 FR 18753, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

NOTE: For amendments to § 173.354 see the List of CFR sections affected in the back of this volume.

§ 173.355 Phenyldichlorarsine.

(a) Phenyldichlorarsine must be packed in specification containers as follows:

(1) Spec. 5A (§ 178.81 of this subchapter) Metal barrels or drums, made of not less than 12 gauge steel, and limited to 30 gallons capacity, with openings not exceeding 2.3 inches in diameter. Each metal barrel or drum must be tested before each filling to 20 pounds hydrostatic test.

[29 FR 18753, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16084, Apr. 15, 1976]

Subpart J—Other Regulated Material; Definition and Preparation

Source: Amdt. 173-94, 41 FR 16087, Apr. 15, 1976, unless otherwise noted.

§ 173.500 Definitions.

(a) For the purpose of this subchapter, and Other Regulated Material (ORM) A, B, or C is any material that does not meet the definition of a hazardous material, other than a combustible liquid in packagings having a capacity of 110 gallons or less, and is specified in § 172.101 as an ORM material or that possesses one or more of the characteristics described in the following groups.

Note 1: An ORM with a flash point of 100° to 200° F. when transported with more than 110 gallons in one container shall be classed as a combustible liquid.

(1) An ORM-A material is a material which has an anesthetic, irritating, noxious, toxic, or other similar property and which can cause extreme annoyance or discomfort to passengers

and crew in the event of leakage during transportation.

(2) An ORM-B material is a material (including a solid when wet with water) capable of causing significant damage to a transport vehicle or vessel from leakage during transportation. Materials meeting one or both of the following criteria are ORM-B materials:

(i) A liquid substance that has a corrosion rate exceeding 0.250 inch per year (IPY) on aluminum (nonclad 7075-T6) at a test temperature of 130° F. An acceptable test is described in NACE Standard TM-01-69.

(ii) Specifically designated by name in § 172.101 of this subchapter.

(3) An ORM-C material is a material which has other inherent characteristics not described as an ORM-A or ORM-B but which make it unsuitable for shipment, unless properly identified and prepared for transportation. Each ORM-C material is specifically named in § 172.101 of this subchapter.

(4) An ORM-D material is a material such as a consumer commodity which, though otherwise subject to the regulations of this subchapter, presents a limited hazard during transportation due to its form, quantity and packaging. They must be materials for which exceptions are provided in § 172.101 of this subchapter. A shipping description applicable to each ORM-D material or category of ORM-D materials is found in § 172.101 of this subchapter.

§ 173.505 Exceptions for Other Regulated Material (ORM).

(a) The following ORM materials, unless otherwise provided in § 172.101 of this subchapter, are not subject to the requirements of this subchapter, except §§ 173.6 and 173.24 and Subparts C and D of Part 172, when packaged as follows:

(1) ORM—A, B, or C liquid, not over one pint in one packaging;

(2) ORM—A or B solid, not over five pounds in one packaging;

(3) ORM—C solid, not over twenty-five pounds in one packaging.

§ 173.510 General packaging requirements.

(a) Except as provided in § 173.505, ORM materials must be prepared for shipment in compliance with the following:

(1) Each material must be offered for transportation and transported in compliance with Subparts B, C, and D of Part 172 of this subchapter and Subpart A of Part 173.

(2) For packagings of 110 gallon capacity or less, sufficient outage (ullage) must be provided so the packaging will not be liquid full at 130° F. (55° C.).

(3) When a liquid or solid has an absolute vapor pressure exceeding 16 p.s.i. at 100° F. (38° C.), the primary packaging must be capable of withstanding the inside vapor pressure at 130° F. without leakage.

(4) Any material classed as an ORM material, which may cause a hazard in transportation due to its reaction with water, must be packaged with either an inner or outer water proof packaging.

Sec.
178.7 Specification 1E; glass carboys in plywood drums.
178.8 Specification 2S; metal-jacketed lead carboys.
178.9 Specification 2SA; metal-jacketed lead carboys.
178.12 Specification 34B; aluminum carboys.
178.13 Specification 1H; polyethylene carboys in low carbon steel or other equally efficient metal crates.
178.14 Specification 1K; glass carboys cushioned with expandable polystyrene in wooden wirebound box outside containers.
178.15 Specification 31; jugs in tubs.
178.16 Specification 35; non-reusable molded polyethylene drum for use without overpack; removable head required.
178.18 Specification 43A; rubber drums.
178.19 Specification 34; reusable molded polyethylene container for use without overpack. Removable head not authorized.

Subpart B—Specifications for Inside Containers, and Linings

178.20 Specification 2A; inside containers, metal cans, pails and kits.
178.21 Specification 2T; polyethylene container.
178.22 Specification 2C; inside containers, corrugated fiberboard cartons.
178.23 Specification 2D; inside containers, duplex paper bags.
178.24 Specification 2U; molded or thermoformed polyethylene containers having rated capacity of over one gallon. Removable head containers or containers fabricated from film not authorized.
178.24a Specification 2E; inside polyethylene bottle.
178.25 Specification 2P; inside metal containers and liners.
178.26 Specification 2G; inside containers, fiber cans and boxes.
178.27 Specification 2TL; polyethylene container.
178.28 Specification 2J; inside containers, waterproof paper bags for linings.
178.29 Specification 2K; inside containers, paper bags for linings.
178.30 Specification 2L; lining for boxes.
178.31 Specification 2M; waterproofed paper lining.
178.32 Specification 2N; inside containers, metal cans.
178.33 Specification 2P; inside nonrefillable metal containers.
178.33a Specification 2Q, inside nonrefillable metal containers.
178.34 Specification 2R; inside containment vessel.

Sec.
178.35 Specification 2S; polyethylene packaging.
178.35a Specification 2SL; molded or thermoformed polyethylene packaging.

Subpart C—Specifications for Cylinders

178.36 Specification 3A; seamless steel cylinders or 3AX; seamless steel cylinders of capacity over 1,000 pounds water volume.
178.37 Specification 3AA; seamless steel cylinders made of definitely prescribed steels or 3AAX; seamless steel cylinders made of definitely prescribed steels of capacity over 1,000 pounds water volume.
178.38 Specification 3B; seamless steel cylinders.
178.39 Specification 3BN; seamless nickel cylinders.
178.40 Specification 3C; seamless steel cylinders.
178.41 Specification 3D; seamless steel cylinders.
178.42 Specification 3E; seamless steel cylinders.
178.43 Specification 3A480X; seamless steel cylinders.
178.44 Specification 3HT; inside containers, seamless steel cylinders for aircraft use made of definitely prescribed steel.
178.45 Specification 3T; seamless steel cylinder.
178.47 Specification 4DS; inside containers, welded stainless steel for aircraft use.
178.48 Specification 4; forge welded steel cylinders.
178.49 Specification 4A; forge welded steel cylinders.
178.50 Specification 4B; welded and brazed steel cylinders.
178.51 Specification 4BA; welded or brazed steel cylinders made of definitely prescribed steels.
178.52 Specification 4C; welded and brazed steel cylinders.
178.53 Specification 4D; inside containers, welded steel for aircraft use.
178.54 Specification 4B240-FLW welded or welded and brazed cylinders with fusion-welded longitudinal seam.
178.55 Specification 4B240ET; welded and brazed cylinders made from electric resistance welded tubing.
178.56 Specification 4AA480; welded steel cylinders made of definitely prescribed steels.
178.57 Specification 4L; welded cylinders insulated.
178.58 Specification 4DA; inside containers, welded steel for aircraft use.
178.59 Specification 8; steel cylinders with approved porous filling for acetylene.
178.60 Specification 8AL; steel cylinders with approved porous filling for acetylene.
178.61 Specification 4BW; welded steel cylinders made of definitely prescribed steels with electric-arc welded longitudinal seam.
178.65 Specification 39; non-reusable (non-refillable) cylinder.
178.66 Specification 4E; welded aluminum cylinders.

Subpart D—Specifications for Metal Barrels, Drums, Kegs, Cases, Trunks, and Boxes

178.80 Specification 5; steel barrels or drums.
178.81 Specification 5A; steel barrels or drums.
178.82 Specification 5B; steel barrels or drums.
178.83 Specification 5C; steel barrels or drums.
178.84 Specification 5D; steel barrels or drums, lined.
178.85 Specification 5F; steel drums.
178.87 Specification 5H; steel barrels or drums, lead lined.
178.88 Specification 5K; nickel barrels or drums.
178.89 Specification 5L; steel barrels or drums.
178.90 Specification 5M; monel drums.
178.91 Specification 5X; steel drums, aluminum lined.
178.92 Specification 5P; lagged steel drums.
178.97 Specification 6A; steel barrels or drums.
178.98 Specification 6B; steel barrels or drums.
178.99 Specification 6C; steel barrels or drums.
178.100 Specification 6J; steel barrels and drums.
178.101 Specification 6K; steel barrels or drums.
178.102 Specification 6D; cylindrical steel overpack, straight sided, for inside plastic container.
178.103 Specification 6L; metal packaging.
178.104 Specification 6M; metal packaging.
178.107 Specification 42B; aluminum drums.
178.108 Specification 42C; aluminum barrels or drums.
178.109 Specification 42D; aluminum drums.
178.110 Specification 42F; aluminum barrels or drums.
178.111 Specification 42G; aluminum drums.
178.112 Specification 42H; aluminum drums; removable head containers not authorized.
178.115 Specification 17C; steel drums.

PART 178—SHIPPING CONTAINER SPECIFICATIONS

Sec.
178.0 Purpose, scope, and applicability.

Subpart A—Specifications for Carboys, Jugs in Tubs, and Rubber Drums

178.1 Specification 1A; boxed carboys.
178.2 Specification 1B; boxed lead carboys.
178.3 Specification 1C; carboys in kegs.
178.4 Specification 1D; boxed glass carboys.
178.5 Specification 1X; boxed carboys, 5 to 6½ gallons, for export only.
178.6 Specification 1EX; glass carboys in plywood drums.

AUTHORITY: 49 U.S.C. 1804, 1808; 49 CFR 1.53(e), unless otherwise noted.

NOTE: Nomenclature changes to Part 178 appear at 43 FR 36446 (Amdt. 178-49), Aug. 17, 1978, and 43 FR 48645, Oct. 19, 1978 (Amdt. 178-51).

EFFECTIVE DATE NOTE: At 43 FR 48645, Oct. 19, 1978, amendments were made to this Part 178, effective Oct. 19, 1978. At 43 FR 51020, Nov. 2, 1978, the effective date was corrected to Sept. 30, 1978.

§ 178.0 Purpose, scope, and applicability.

(49 U.S.C. 1803, 1804, 1808 and 49 CFR 1.53(e))

[Amdt. 178-40, 42 FR 2689, Jan. 13, 1977]

§ 178.0-1 Purpose and scope.

This part prescribes the manufacturing and testing specifications for packaging and containers used for the transportation of hazardous materials in commerce.

(49 U.S.C. 1803, 1804, 1808 and 49 CFR 1.53(e))

[Amdt. 178-40, 42 FR 2689, Jan. 13, 1977]

§ 178.0-2 Applicability.

(a) Any person who performs a function prescribed in this part, shall perform that function in accordance with this part.

(b) When this part requires (either expressly or by reference to § 173.24 of this subchapter) a packaging or container to be marked with a DOT specification (for example, DOT-1A, DOT-17E-304HT, DOT-23C40), compliance with that requirement is the responsibility of the packaging or container manufacturer. Marking the packaging or container with the DOT specification shall be understood to certify compliance by the manufacturer, that the functions performed by the manufacturer, as prescribed in this part, have been performed in compliance with this part. (See also § 173.28 "Reuse of containers." That section envisions the marking of containers to be performed by a person other than the original manufacturer.)

(c) Except as specifically provided in §§ 178.337-18 and 178.340-10, the manufacturer of a packaging or container should inform each person to whom that packaging or container is transferred of any specification requirements which have not been met at time of transfer.

(49 U.S.C. 1803, 1804, 1808 and 49 CFR 1.53(e))

[Amdt. 178-40, 42 FR 2689, Jan. 13, 1977]

Subpart A—Specifications for Carboys, Jugs in Tubs, and Rubber Drums

SOURCE: 29 FR 18813, Dec. 29, 1964, unless otherwise noted. Redesignated at 32 FR 5606, Apr. 5, 1967.

§ 178.1 Specification 1A; boxed carboys.

Glass, earthenware, clay, or stoneware.

§ 178.1-1 Compliance.

(a) Required in all details.

§ 178.1-2 Reuse of packages.

(a) Parts of outside container and cushioning must be replaced when broken, decayed, or inefficient in any way.

(b) Carboys with lip cracked or badly chipped not authorized; gasket seat must be even. Packages must be capable of passing tests prescribed in § 178.1-9.

§ 178.1-3 Closing devices required.

(a) As follows except when otherwise authorized in the packing regulations:

(1) Acidproof stoppers or other devices with gaskets, securely fastened; venting closures are required when necessary to prevent internal pressure in excess of 8 pounds per square inch gauge at 130° F.

(2) Glass stoppers around to fit and securely fastened are authorized when internal pressures do not exceed 8 pounds per square inch gauge at 130° F.

§ 178.1-4 Capacity and marking of carboy.

(a) Containers 5 to 13 gallons are classed as carboys. Must be embossed to indicate maker and year of manufacture; mark of maker to be registered with the MTB-TSC.

§ 178.1-5 Class carboys.

(a) Thoroughly annealed; top of lip smooth and even; must contain at least 20 pounds of glass of 12-gallon carboys and 21 pounds for 13-gallon carboys. Glass in side walls should be well distributed and at least 1/16" thick. Defective carboys not authorized.

§ 178.1-6 Earthenware, clay, or stoneware carboys.

(a) Of acidproof material.

§ 178.1-7 Outside containers.

(a) Wooden boxes completely enclosing body of carboy or wooden boxes completely enclosing body and neck of carboy, with 4 vertical corner posts, two cleats for shoes and two carrying cleats. (See paragraph (e) of this section.)

(b) Lumber to be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.

(c) Assemble sides and ends with grain of wood horizontal and nail as specified. Nail bottom to sides and ends; fasten top by any efficient means. Cleats for shoes to be along edges of bottom parallel to carrying cleats. (See paragraph (e) of this section.)

(d) Parts and dimension as follows:

Nominal carboy capacity not over	Minimum dimensions			Nails—sides and bottom	
	Thickness sides, top, bottom and ends	[1]Vertical corner posts	[1]Carrying cleats and shoes	[2]Size not less than	[3]Spacing average not over
Gallons	*Inch*	*Inches*	*Inches*	*Penny*	*Inches*
5 to 7	7/8	7/8 × 2 1/2	7/8 × 1 1/2	7 8	2 1/2 2
From 7 to 13	[4]9/16	[4]9/16 × 3 1/2	[4]9/16 × 2 9/16	9 8	2 1/2 2 1/2

[1] Other dimensions with equal cross section acceptable.
[2] Screws of equal efficiency authorized.
[3] Spacing 6 inches acceptable along edge grain of bottoms.

(e) In place of bottom cleats, the following is authorized: 2 angle irons at least 1 1/4" × 1 1/4" × 1/16", applied across grain of bottom boards from corner to corner, supported by acid resistant metal corner supports securely fastened to sides and ends at each bottom corner so as to raise bottom boards of box at least 3/4" above bottom of corner supports; nailing along end grain of bottom boards not required.

(f) Special box. Must comply with this specification except as follows: Bottom of box must be nailed to 4 nailing cleats which form part of the sides and ends of box. Top of box must be reinforced by 2 cleats of 1/4-inch lumber 4 inches wide, extending the entire width of the top at right angles to the sides of the boards forming the top; a vacant space of 1 inch between outside edge of top and cleat should be allowed for nailing top to box; parts and dimensions must be as follows:

Carboy capacity, not over (gallons)	Minimum dimensions					Nails, sides, and bottom	
	Thickness of sides, top, and ends	Thickness of bottom	Thickness and width of bottom nailing cleats	Carrying cleats and shoes	Triangular vertical corner posts	Size not less than [1]	Spacing average not over [2]
	Inch	*Inches*	*Inches*	*Inches*	*Inches*	*Penny*	*Inches*
5 to 13	1/4	2 1/16	[3]1/16 by 2 1/4	2 1/16 by 2 1/4	2 1/4 by 2 1/4 (short sides).	8 10	2 1/4 2 1/4

[1] Screws of equal efficiency authorized.
[2] Spacing 6 inches acceptable along edge grain of bottoms.

(g) *Cushioning materials.* Cushioning devices or materials must be of such type, or be so secured within the outer container, that the carboy cannot shift in a way that cushioning efficiency is reduced.

§ 178.1-8 Marking of outside container.

(a) On each container with letters and figures at least 3/4 inch high applied by hot branding iron or printing ink of a color sharply contrasting to background of package with high pressure dies as follows:

(1) DOT-1A.

(2) Name or symbol of person making the mark specified in paragraph (a)(1) of this section and located just above or below that mark. Symbol, if used, must be registered with the MTB-TSC.

[29 FR 18813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-40, 41 FR 38180, Sept. 9, 1976]

§ 178.1-9 Tests.

(a) *Apparatus.* Standard required. Detail prints can be obtained from Bureau of Explosives.

(b) *Method.* Fill with water to lower edge of neck; swing 55" measured from wall to nearest bottom edge of basket:

(1) Side shock; test at least 10 carboys.

(2) Bottom shock; test at least 6 carboys.

NOTE 1: In instances where 99 or less carboys are in service during either 6-month period of the year it shall be acceptable to test 10 percent of the total but no less than 3 carboys on both the side and bottom swing. If this provision is used, the report of test results must so state.

(c) *Acceptable results.* 90 percent of carboys must not break under side shock and same for bottom shock, except both results must be 100 percent if modified test authorized by Note 1 of paragraph (b) of this section is used.

(d) *When required.* By each manufacturer, and each shipper who fills and ships new or used carboys; during each 6 months of each year, one series each year to be witnessed by repre-

sentative of Bureau of Explosives; separate tests required for:

(1) New packages (those with new outside container).

(2) Used packages.

(3) Packages with carboys differing over 2 gallons.

(4) Packages differing in kind of cushioning.

(e) *Exception.* Tests not required by shipper who fills and ships or reships for one shipment only packages obtained from a manufacturer or shipper who has had tests made.

(f) *Reports.* Required to be made to MTB-TSC on form as follows:

REPORT OF TESTS OF CARBOYS

(As required by D.O.T. Regulations and Specifications)

(Place) _____

(Date) _____

Test made for _____

(Give name and address of plant for which tests were made)

Description of package	Number of test	Results: 55-inch swing Side	Results: 55-inch swing Bottom
Capacity	1		
Condition [1]	2		
	3		
Type of inside container [2]	4		
	5		
Cushioning [3]	6		
	7		
Diameter of bottle	8		
	9		
Size of outside container (inside)	10		
	11		
	12		
Capacity	13		
Condition [1]	14		
	15		
Type of inside container [2]	16		
	17		
Cushioning [3]	18		
	19		
Diameter of bottle	20		
	21		
Size of outside container (inside)	22		
	23		
	24		

Specification mark is _____

Identification symbol is _____

Remarks _____

_____

_____

(Signature) _____

(Per) _____

[1] State whether outside container is new or used.

[2] State whether glass, earthenware, etc.

[3] State whether hay, mineral wool, ground cork, excelsior, wood strips —— type, cork pads ——type, etc.

[29 FR 18813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-21, 36 FR 18469, Sept. 15, 1971]

§ 178.1-10 Approval of veneer, plywood and laminated wood boxes.

(a) Boxes of veneer, plywood, laminated wood, or any combination thereof, which comply with §§ 178.1-1 to 178.1-10 (except § 178.1-7 (a), (c), and (d), are approved provided:

(1) Outside containers shall completely enclose body of carboy or body and neck of carboy.

(2) That complete inner packing and box specifications have been filed with and approved by the Bureau of Explosives.

(3) That these boxed carboys pass the regular tests prescribed in § 178.1-9.

(4) That boxed carboys after a minimum service period of 6 months pass the tests prescribed in § 178.1-9.

(5) That a detailed report of tests prescribed under paragraph (a)(4) of this section has been filed with and accepted as satisfactory by the Bureau of Explosives.

(b) Gasket or lining for cap must be used and shall be resistant to lading and:

(1) Must be liquid tight or;

(2) Must be liquid tight up to venting pressure when such venting is prescribed for the material which is to be shipped.

(c) At least one complete continuous thread must be engaged with gasket in place.

§ 178.4-4 Capacity and marking of carboy.

(a) *Capacity.* 6.5 United States gallons nominal capacity, 7.0 United States gallons overflow, tolerance plus or minus 10 fluid ounces.

(b) *Marking.* Each carboy bottle must be embossed in bottom as follows:

Maker's mark (to be registered with MTB-TSC.)
Year of Manufacture
DOD-1D

§ 178.4-5 Glass carboy bottle.

(a) Must be machine-blown, thoroughly and properly annealed, with screw thread finish having at least one continuous thread to accommodate closure; top of lip smooth and even; must contain 14 pounds of glass, tolerance minus 8 ounces plus 16 ounces. Minimum thickness to be .075 inch. Defective carboys not authorized.

§ 178.4-6 Outside containers.

(a) Wooden boxes completely enclosing body and neck of carboy, with 4 vertical corner posts, two cleats for shoes and two carrying cleats. An opening not exceeding 3 inches in width may be provided directly above the neck of bottle, if the top of the box is made up of not more than two pieces of lumber of $^{3}/_{16}$ inch thickness. Bottom board of the two ends of the box must be constructed of lumber at least one inch thick, must be flush with the carrying cleats and be at least 2¾ inches in width. Cleats or other fasteners used to secure cover must not extend beyond carrying cleats.

(b) Lumber to be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.

§ 178.4 Specification 1D; boxed glass carboys.

§ 178.4-1 Compliance.

(a) Required in all details.

§ 178.4-2 Reuse of packages.

(a) Parts of outside container and cushioning must be replaced when broken, decayed, or inefficient in any way.

(b) Carboys with lip cracked or badly chipped not authorized; gasket seat must be even. Packages must be capable of passing tests prescribed in § 178.4-8.

§ 178.4-3 Closure.

(a) Threaded screw cap which shall be constructed of a suitable plastic or other material resistant to lading.

(c) Assemble sides and ends with grain of wood horizontal and nail as specified. Nail bottom to sides and ends; fasten top by any efficient means (friction closure not authorized). Cleats for shoes to be along edges of bottom parallel to carrying cleats and at right angle to the direction of bottom board or boards.

(d) Parts and dimensions as follows:

Carboy capacity, nominal not over (gallons)	Minimum dimensions			Nails—Sides and bottom[1]	
	Thickness—Sides, top, bottom, posts[2] and ends[3]	Vertical corner posts[2]	Carrying cleats and shoes[3]	Size	Spacing, average[4]
	Square				
	Inch	*Inches*	*Inches*	*Penny*	*Inches*
6.5	⅝	2.0	½×2¾	6	2

[1] Except as prescribed or permitted under § 178.4-6(a).
[2] Cross sectional area.
[3] Other dimensions with equal cross section acceptable, in lieu of separate carrying cleats, side board, at point where cleat should be located, may be constructed of lumber not less than one inch thick so that overhang will be at least ½ inch.
[4] Screws of equal efficiency authorized.
[5] Spacing 8 inches acceptable along edge grain of bottoms.

(e) *Cushioning materials.* Cushioning devices or materials must be of such type, or be so secured within the outer container, that the carboy cannot shift in a way that cushioning efficiency is reduced.

§ 178.4-7 Marking of outside container.

(a) On each container with letters and figures at least ¾ inch high applied by hot branding iron or printing ink of a color sharply contrasting to background of package with high pressure dies as follows:

(1) DOT-1D.

(2) Name or symbol of person making the mark specified in paragraph (a)(1) of this section and located just above or below that mark. Symbol, if used, must be registered with the MTB-TSC.

[29 FR 18813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-40, 41 FR 38160, Sept. 9, 1976]

§ 178.4-8 Tests.

(a) *Apparatus.* Standard required. Detail prints can be obtained from Bureau of Explosives.

(b) *Method.* Fill with water to lower edge of neck; swing 55" measured from wall to nearest bottom edge of basket:

(1) Side shock; test at least 10 carboys.

(2) Bottom shock, test at least 5 carboys.

Note 1: In instances where 99 or less carboys are in service during either 6-month period of the year it shall be acceptable to test 10 percent of the total but not less than 3 carboys on both the side and bottom swing. If this provision is used, the report of test results must so state.

(c) *Acceptable results.* 90 percent of carboys must not break under side shock and same for bottom shock, except both results must be 100 percent if modified test authorized by Note 1 of paragraph (b) of this section is used.

(d) *When required.* By each manufacturer, and each shipper who fills and ships new or used carboys; during each 6 months of each year, one series each year to be witnessed by representative of Bureau of Explosives; separate tests required for:

(1) New packages (those with new outside container).

(2) Used packages.

(3) Packages differing in kind of cushioning.

(e) *Exception.* Tests not required by shipper who fills and ships or reships for one shipment only packages obtained from a manufacturer or shipper who has had tests made.

(f) *Reports.* Required to be made to MTB-TSC on form as follows:

REPORT OF TESTS OF CARBOYS

(As required by D.O.T. Regulations and Specifications)

(Place) _____
(Date) _____
Test made for _____

_____
(Give name and address of plant for which tests were made)

Description of package	Number of test	Results: 88-inch swing, Side	Results: 88-inch swing, Bottom
Capacity	1		
Condition[1]	2		
	3		
Type of inside container[2]	4		
	5		
Cushioning[3]	6		
	7		
Diameter of bottle	8		
	9		
Size of outside container (inside)	10		
	11		
	12		
Capacity	13		
Condition[1]	14		
	15		
Type of inside container[2]	16		
	17		
Cushioning[3]	18		
	19		
Diameter of bottle	20		
	21		
Size of outside container (inside)	22		
	23		
	24		

Specification mark is .....
Identification symbol is .....
Remarks .....
.....
.....
(Signature) .....
(Per) .....

[1] State whether outside container is new or used.
[2] State whether glass, earthenware, etc.
[3] State whether hay, mineral wool, ground cork, excelsior, wood strips —— type, cork pads ——type, etc.

(g) *Internal pressure test.* Bottles shall be capable of withstanding a sustained internal pressure of 20 p. s. i. gauge for a 15-day period. Bottle manufacturer shall demonstrate to Bureau of Explosives that bottles of a proposed design will meet this test prior to start of production.

(h) *Hydrostatic pressure test.* One bottle selected at random from each 200 produced on each mold shall be subjected to an instantaneous hydrostatic pressure test to bursting. Pressure at which bottle bursts must not be less than 40 p.s.i. gauge. If bottle so tested fails at a pressure less than 40 p. s. i., 12 additional samples must be selected from the same lot of 200 bottles and tested in the same manner. All 12 samples must pass required test otherwise entire lot shall be rejected.

[29 FR 18813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-21, 36 FR 18469, Sept. 15, 1971]

§ 178.5 Specification 1X; boxed carboys, 5 to 6½ gallons, for export only.

Glass, earthenware, clay, or stoneware. Single-trip container.

§ 178.5-1 Compliance.

(a) Required in all details.

§ 178.5-2 Closing devices required.

(a) As follows except when otherwise authorized in the packing regulations:

(1) Acidproof stoppers or other devices, with gaskets, securely fastened; venting closures are required when necessary to prevent internal pressure in excess of 8 pounds per square inch gauge at 130° F.

(2) Glass stoppers ground to fit and securely fastened are authorized when internal pressures do not exceed 8 pounds per square inch gauge at 130° F.

(3) For box: Two flat metal nailless straps, at least ⅝ inch by 0.020 inch, encircling top, sides, and bottom and securely sealed, are required.

§ 178.5-3 Capacity and marking of carboy.

(a) Containers must be 5 to 6½ gallon size and embossed to indicate maker and year of manufacture.

§ 178.5-4 Glass carboys.

(a) Thoroughly annealed; top of lip smooth and even. Glass in side walls should be well distributed and at least 1/16 inch thick. Defective carboys not authorized.

§ 178.5-5 Earthenware, clay, or stoneware carboys.

(a) Earthenware, clay, or stoneware carboys of acidproof material.

§ 178.5-6 Outside containers.

(a) Wooden boxes completely enclosing body and neck of carboy, with 4 vertical corner posts. Top may consist of cap fitting snugly inside body of box and resting on corner posts.

(b) Lumber to be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere

with nailing, and other defects that would materially lessen the strength.

(c) Assemble sides and ends with grain of wood horizontal and nail as specified; nail bottom to ends; fasten top by any efficient means.

(d) Parts and dimensions. Sides, top, and bottom at least ⅛ inch thick; vertical corner posts at least 2.25 square inches cross section; nails at least 6-penny at 2-inch intervals or 5-penny at 1¾-inch intervals.

(e) *Cushioning materials.* Cushioning devices or materials must be of such type, or be so secured within the outer container, that the carboy cannot shift in a way that cushioning efficiency is reduced.

§ 178.5-7 Marking of outside container.

(a) On each container with letters and figures at least ⅞ inch high applied by hot branding iron or printing ink of a color sharply contrasting to background of package with high pressure dies as follows:

(1) DOT-1X.

(2) Name or symbol of person making the mark specified in paragraph (a)(1) of this section and located just above or below that mark. Symbol, if used, must be registered with the MTB-TSC.

[29 FR 18813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-40, 41 FR 38180, Sept. 9, 1976]

§ 178.5-8 Marking.

(a) Each outside container must also be plainly marked "FOR EXPORT ONLY, NOT RETURNABLE" and the top must be marked "THIS SIDE UP".

§ 178.5-9 Tests.

(a) *Apparatus.* Standard required. Detail prints can be obtained from Bureau of Explosives.

(b) *Method.* Fill with water to lower edge of neck; swing 55" measured from wall to nearest bottom edge of basket:

(1) Side shock; test at least 10 carboys.

(2) Bottom shock; test at least 5 carboys.

(c) *Acceptable results.* 90 percent of carboys must not break under side shock; same for bottom shock.

(d) *When required.* By each manufacturer, and each shipper who fills and ships new carboys; during each 6 months of each year, one series each year to be witnessed by representative of Bureau of Explosives; separate tests required for:

(1) New packages (those with new outside container).

(2) Packages differing in kind of cushioning.

(e) *Exception.* Tests not required by shipper who fills and ships or reships for one shipment only packages obtained from a manufacturer or shipper who has had tests made.

(f) *Reports.* Required to be made to MTB-TSC on form as follows:

REPORT OF TESTS OF CARBOYS

(As required by D.O.T. Regulations and Specifications)

(Place) .....
(Date) .....
Test made for .....

(Give name and address of plant for which tests were made)

Description of package	Number of test	Results: 88-inch swing, Side	Results: 88-inch swing, Bottom
Capacity	1		
Condition[1]	2		
	3		
Type of inside container[2]	4		
	5		
Cushioning[3]	6		
	7		
Diameter of bottle	8		
	9		
Size of outside container (inside)	10		
	11		
	12		
Capacity	13		
Condition[1]	14		
	15		
Type of inside container[2]	16		
	17		
Cushioning[3]	18		
	19		
Diameter of bottle	20		
	21		
Size of outside container (inside)	22		
	23		
	24		

Specification mark is.....
Identification symbol is.....
Remarks.....
.....
.....

(Signature).....
(Per).....

[State whether outside container is new or used.
[State whether glass, earthenware, etc.
[State whether hay, mineral wool, ground cork, excelsior, wood strips —— type, cork pads —— type, etc.

[29 FR 16813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-21, 36 FR 18469, Sept. 15, 1971]

§ 178.6 Specification 1EX; glass carboys in plywood drums.

Single trip container.

§ 178.6-1 Compliance.

(a) Required in all details.

§ 178.6-2 Lumber.

(a) To be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.

§ 178.6-3 Closing devices required:

(a) As follows except when otherwise authorized in the packing regulations:

(1) Acidproof stoppers or other devices, with gaskets, securely fastened; venting closures are required when necessary to prevent internal pressure in excess of 8 pounds per square inch gauge at 130° F.

(2) Glass stoppers ground to fit and securely fastened are authorized when internal pressures do not exceed 8 pounds per square inch gauge at 130° F.

§ 178.6-4 Capacity and marking of carboy.

(a) Containers must be 5 to 6½ gallons capacity and embossed to indicate maker and year of manufacture.

§ 178.6-5 Glass carboys.

(a) Thoroughly annealed; top of lip smooth and even. Glass in side walls should be well distributed and at least 1/16 inch thick. Defective carboys not authorized.

(b) *Closing devices required.* (For carboys without screw thread finish.) As follows except when otherwise authorized in the packing regulations.

(1) Acidproof stoppers or other devices, with gaskets, securely fastened; venting closures are required when necessary to prevent internal pressure in excess of 8 pounds per square inch gauge at 130° F.

(2) Glass stoppers ground to fit and securely fastened are authorized when internal pressures do not exceed 8 pounds per square inch gauge at 130° F.

§ 178.7 Specification 1E; glass carboys in plywood drums.

§ 178.7-1 Compliance.

(a) Required in all details.

§ 178.7-2 Reuse of packages.

(a) Outside container, including metal side seam, must be replaced when broken, decayed, or inefficient in any way.

(b) Carboys with lip cracked or badly chipped not authorized; gasket seat must be even. Packages must be capable of passing tests prescribed in § 178.7-8.

§ 178.7-3 Capacity and marking of carboy.

(a) Glass containers 5 to 7 gallons in this specification are classed as carboys. Must be embossed to indicate maker and year of manufacture; mark of maker to be registered with the MTB-TSC.

§ 178.7-4 Glass carboys.

(a) Thoroughly annealed; top of lip smooth and even. Glass in side walls should be well distributed and at least 1/16 inch thick. Defective carboys not authorized.

§ 178.7-5 Glass carboy bottle.

(a) (Threaded screw-cap closure only.) Must be machine-blown, thoroughly and properly annealed, with screw thread finish having at least one continuous thread to accommodate closure; top of lip smooth and even; must contain 14 pounds of glass, tolerance minus 8 ounces plus 16 ounces. Minimum thickness to be 0.075 inch. Defective carboys not authorized.

(b) *Closure.* (1) Threaded screw cap which shall be constructed of a suitable plastic or other material resistant to lading.

(2) Gasket or lining for cap must be used and shall be resistant to lading and must be liquid tight; or must be liquid tight up to venting pressure when such venting is prescribed for the material which is to be shipped.

(3) At least one complete continuous thread must be engaged with gasket in place.

§ 178.7-6 Outside containers.

(a) Plywood drums completely enclosing body of carboy or completely enclosing body and neck of carboy and constructed as follows:

(1) *Lumber.* To be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.

(2) *Body shell.* To be of two plys of good commercial box or sheathing grade hardwood veneer, each not less than 1/11 inch in thickness, firmly glued together with waterproof glue (a section of plywood from body shell is

immersed in water at room temperature for 48 hours. If no delamination or separation of plys is apparent, the glue is deemed to be waterproof) with the grain of the outside ply parallel and the inner ply vertical to the heads. The body shall be butt-jointed and shall be fastened on the outside with a 28-gauge steel strip, not less than 1¼ inches in width. Staples of 17-gauge shall be driven on each side of the joint, spaced not more than 1½ inches apart and clinched on inside of the body.

(3) *Heads.* To be of three plys of good commercial box or sheathing grade hardwood veneer, each not less than 1/10 inch in thickness, firmly glued together with waterproof glue (a section of plywood from head is immersed in water at room temperature for 48 hours; if no delamination or separation of plies is apparent, the glue is deemed to be waterproof), with the grain of each outer ply at right angles to the grain of the center ply. Each head shall be circled to fit snugly inside of the body. Interior heads shall be of the same construction.

(4) *Hoops.* To be of hardwood veneer, not less than 1¾ inches wide by ⅛ inch thick. Hoops shall be fastened to the body by 17-gauge staples on not less than 3-inch centers and shall be overlapped not less than 3 inches.

(5) *Head liners. (Plywood drum completely enclosing body of carboy).* When plywood cushioning is used the inner lining strips which support the plywood cushion shall be of hardwood veneer not less than ⅛ inch in thickness and ⅝ inch in width and shall butt or slightly gap. All other head lining strips shall be made of hardwood veneer not less than ⅛ inch in thickness and ⅝ inch in width and shall overlap not less than 3 inches. The top head liners shall be fastened by 17-gauge staples on not less than 3-inch centers. The staples shall be driven through the outer hoop and body and clinched on the inside of the veneer strips. The bottom head liners shall be fastened the same as top head liners, or, by 14-gauge staples driven through the head liner and body into the outer hoop on not less than 4-inch centers.

(6) *Head liners. (Plywood drum completely enclosing body and neck of carboy).* When plywood cushioning is used the inner lining strips which support the plywood cushion shall be of hardwood veneer not less than ⅛ inch in thickness and ⅝ inch in width and shall butt or slightly gap. All other head lining strips shall be made of hardwood veneer not less than ⅛ inch in thickness and ⅝ inch in width and shall overlap not less than 3 inches. The inside head liners and the inside liner strips for the false head and support of the top head shall be fastened by 17-gauge staples on not less than 3-inch centers. The staples shall be driven through the outer hoop and body and clinched on the inside of the veneer strips, except that the strips holding the false head shall have staples only through the body and shell liner. The top head liner which forms the final closure shall be fastened to the body by 14-gauge staples driven through the head liner and body into the outer hoop on not less than 4-inch centers. The bottom head liners shall be fastened the same as top head liners, or, by 17-gauge staples driven through the outer hoop and body and clinched on the inside of the veneer strips on not less than 3-inch centers.

(7) *Battens.* At least ⅝ inch by 2 inches secured at each end by two nails driven through the hoops and body shell. One batten must be applied to the bottom of plywood drums, completely enclosing the body of carboys; and two battens must be applied to plywood drums completely enclosing the body and neck of carboys, one of which must be affixed to the top and the other to the bottom of the drum.

(b) *Cushioning materials.* Cushioning devices or materials must be of such type, or be so secured within the outer container, that the carboy cannot shift in a way that cushioning efficiency is reduced.

§ 178.7-7 Marking of outside container.

(a) On each container with letters and figures at least ⅝ inch high applied by hot branding iron or printing ink of a color sharply contrasting to background of package with high pressure dies as follows:

(1) DOT-1E.

(2) Name or symbol of person making the mark specified in paragraph (a)(1) of this section and located just above or below that mark. Symbol, if used, must be registered with the MTB-TSC.

[29 FR 16813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-40, 41 FR 38180, Sept. 9, 1976]

§ 178.7-8 Tests.

(a) *Apparatus.* Standard required. Detail prints can be obtained from Bureau of Explosives.

(b) *Method.* Fill with water to lower edge of neck; swing 55 inches measured from wall to nearest bottom edge of basket;

(1) Side shock; test at least 10 carboys.

(2) Bottom shock; test at least 5 carboys.

Note 1: In instances where 99 or less carboys are in service during either 6-month period of the year it shall be acceptable to test 10 percent of the total but not less than 5 carboys on both the side and bottom swing. If this provision is used, the report of test results must so state.

(c) *Acceptable results.* 90 percent of carboys must not break under side shock and same for bottom shock, except both results must be 100 percent if modified test authorized by Note 1 of paragraph (b) of this section is used.

(d) *When required.* By each manufacturer, and each shipper who fills and ships new or used carboys; during each 6 months of each year, one series each year to be witnessed by representative of Bureau of Explosives; separate tests required for:

(1) New packages (those with new outside container).

(2) Used packages.

(3) Packages with carboys differing over 2 gallons.

(4) Packages differing in kind of cushioning.

(e) *Exception.* Tests not required by shipper who fills and ships or reships for one shipment only packages obtained from a manufacturer or shipper who has had tests made.

(f) *Reports.* Required to be made to MTB-TSC on form as follows:

REPORT OF TESTS OF CARBOYS

(As required by D. O. T. Regulations and Specifications)

(Place) _____

(Date) _____

Tests made for _____

(Give name and address of plant for which tests were made) _____

Description of package	Number of test	Results: 55-inch swing — Side	Results: 55-inch swing — Bottom
Capacity	1		
Condition [1]	2		
	3		
Type of inside container [2]	4		
Cushioning [3]	5		
	6		
Diameter of bottle	7		
	8		
	9		
Size of outside container (inside)	10		
	11		
	12		
Capacity	13		
Condition [1]	14		
	15		
Type of inside container [2]	16		
	17		
Cushioning [3]	18		
	19		
Diameter of bottle	20		
	21		
Size of outside container (inside)	22		
	23		
	24		

Specification mark is _____

Identification symbol is _____

Remarks _____

_____

_____

(Signature) _____

(Per) _____

[1] State whether outside container is new or used.
[2] State whether glass, earthenware, etc.
[3] State whether hay, mineral wool, ground cork, excelsior, wood strips — type, cork pads — type, etc.

[29 FR 16813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-21, 36 FR 18469, Sept. 15, 1971]

§ 178.8 Specification 2S; metal-jacketed lead carboys.

§ 178.8-1 Compliance.

(a) Required in all details.

§ 178.8-2 Size.

(a) Not over 15 gallons (nominal).

§ 178.8-3 Test.

(a) By 5 pounds internal pressure, without leakage, before each shipment.

§ 178.8-4 Parts required and dimensions.

(a) As in §§ 178.8-5 to 178.8-8.

§ 178.8-5 Carboy closing device.

(a) To consist of follower-ring with stud bolts, plate-gasket, and cap as shown in § 178.8-8.

(b) Follower-ring to be 1½" wide with machined top face, inner edges rounded off to about ¼" radius, and fitted with 4 stud bolts, fastened to prevent turning, for 2" neck and 6 bolts for larger necks.

(c) Neck of carboy to be flanged over to edge of follower-ring and may be swedged out under it; inside diameter of neck not over 4".

§ 178.8-6 Outside container.

(a) Welding authorized in place of rivets shown; body rivets, if used, to be countersunk on inside.

(b) Bayonet fastenings, or other efficient method, authorized to secure top to body in place of bolts shown.

(c) Two adequate lifting handles required on body.

(d) Projections above level of top edge of body not authorized.

§ 178.8-7 Marking on each outside container.

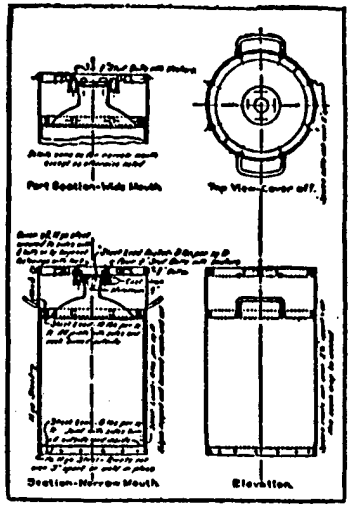
(a) By embossing on top with raised marks ¾" high as follows (stamping authorized if clearly legible):

(1) DOT-28A.

(2) Name or symbol of person making the mark specified in paragraph (a)(1) of this section and located just above or below that mark. Symbol, if used, must be registered with the MTB-TSC.

[29 FR 18813, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-40, 41 FR 38180, Sept. 9, 1976]

§ 178.8-8 Shipping container specification No. 28.



Subpart D—Specifications for Metal Barrels, Drums, Kegs, Cases, Trunks, and Boxes

SOURCE: 29 FR 18693, Dec. 29, 1964, unless otherwise noted. Redesignated at 32 FR 5606, Apr. 5, 1967.

§ 178.80 Specification 5; steel barrels or drums.

Removable head containers which will pass all required tests are authorized.

§ 178.80-1 Compliance.

(a) Required in all details.

§ 178.80-2 Rated capacity.

(a) Rated capacity as marked, see § 178.80-11(a)(3). Actual capacity of straight-sided containers shall be not less than rated (marked) capacity plus 2 percent, nor greater than rated capacity plus 2 percent plus 1 quart, except that for containers over 30 gallons marked capacity actual capacity shall be not less than rated capacity plus 2 percent, nor greater than rated capacity plus 2 percent plus 2 quarts; actual capacity of bilge-type containers must be not less than rated capacity, nor greater than rated capacity plus 2 percent plus 2 quarts.

§ 178.80-3 Composition.

(a) Sheets for body and heads to be low carbon, open hearth or electric steel. Stainless steel, when used, must be, except for rolling hoops and chime reinforcement, an austenitic 18 or 8 chrome nickel alloy with carbon content not over 0.08 percent, or other equivalent grades.

§ 178.80-5 Seams.

(a) Body seams welded.

§ 178.80-6 Chime reinforcement.

(a) Containers over 25 gallons capacity, with flanged head secured to body, to have chime reinforcement adequate for its protection.

§ 178.80-7 Parts and dimensions.

(a) Parts and dimensions as follows:

Marked capacity not over (gallons)	Type of container	Minimum thickness, uncoated sheets (gauge)		Rolling hoops		
		Body sheet	Head sheet	Type[1]	Minimum Size (gauge or inch)	Minimum Weight (pounds per foot)
5	Straight side	22	22	None		
10	do	20	20	do		
23	do	14	14	do		
33	do	18	18	U	18	
55	do	18	18	U[2]	14	
110	do	14	14	U[2]	12	
33	do	18	18	I-bar	⅝×1¼	1.25
55	do	18	18	I-bar[3]	⅝×1¼	1.25
110	do	14	14	I-bar[3]	⅝×1¼	1.25
33	do	18	18	([4])		
55	do	14	14	([4])		
33	Bilge	14	16	None		
55	do	13	14	do		

[1] Rolling hoops of pliable solid rubber or other suitable material are also authorized when approved as to type and construction by the Bureau of Explosives.

[2] Rolled or swedged in hoops.

[3] In addition to the normal rolling hoops, the body of each removable head drum must have a rolled or swedged in hoop the center-line of which shall be not more than 3 inches from the top curl.

(b) Steel sheets of specified gauges shall comply with the following:

Gauge No.	Nominal thickness[1] (inch)	Minimum thickness[1] (inch)
13	0.0897	0.0817
14	.0747	.0677
16	.0598	.0533
18	.0478	.0428
20	.0359	.0324
22	.0299	.0269

[1] Thickness shall be measured at any point on the sheet not less than ⅜ inch from an edge.

§ 178.80-8 Rolling hoops.

(a) Separate hoops to have tight fit on shell and be firmly secured in place. Beading under rolling hoops not permitted. Attachment to drum body by spot welding, except for continuous resistance method, not permitted. Welding of I-bar type directly to body of drum in any manner not permitted.

§ 178.80-9 Closures.

(a) Adequate to prevent leakage; gaskets required.

(b) Closing part (plug, cap, plate, etc., see Note 1) must be of metal as thick as prescribed for head of container; this not required for containers of 12 gallons or less when the opening to be closed is not over 2.7 inches in diameter. If unthreaded cap is used it must be provided with outside sealing devices which cannot be removed without destroying the cap or sealing device.

NOTE 1: This does not apply to cap seal over a closure which complies with all requirements.

(c) For closure with threaded plug or cap, the seat (flange, etc.,) for plug, or cap, must have 3 or more complete threads; two drainage holes of not over 7/16-inch diameter are allowed. Plug, or cap, must have sufficient length of thread to engage 3 threads when screwed home with basket in place.

(d) Full removable head drums over 5 gallons capacity must be closed by means of 12 gauge bolted ring with drop forged lugs, one of which is threaded, and having ⅜ inch bolt and nut for drums not over 30 gallons capacity and ½ inch bolt and nut for drums over 30 gallons capacity. Five gallon drums must be of lug type closure with cover having at least 16 lugs. Equally efficient types of closures are authorized upon demonstration and proof of satisfactory tests to representative of Bureau of Explosives.

§ 178.80-10 Defective containers.

(a) Leaks and other defects to be repaired by method used in constructing container, not by soldering.

§ 178.115 Specification 17C; steel drums.

Single trip container. Removable head containers which will pass all required tests are authorized.

§ 178.115-1 Compliance.

(a) Required in all details.

§ 178.115-2 Rated capacity.

(a) Rated capacity as marked, see § 178.115-10(a)(3). Minimum actual capacity of containers shall be not less than rated (marked) capacity plus 4 percent. Maximum actual capacity shall not be greater than rated (marked) capacity plus 5 percent or rated (marked) capacity plus 4 percent plus 1 quart whichever is the greater.

§ 178.115-3 Composition.

(a) Sheets for body and heads to be low carbon, open hearth or electric steel.

§ 178.115-5 Seams.

(a) Body seams welded.

§ 178.115-6 Parts and dimensions.

(a) Parts and dimensions as follows:

Marked capacity not over (gallons)	Type of container	Minimum thickness, uncoated sheets (gauge)		Rolling hoops	
		Body sheet	Head sheet	Type	Minimum size (gauge or inch)	Minimum weight (pounds per foot)
5[1]	Straight side	[2]24	[2]24	None		
10	do	20	20	do		
30	do	18	18	[3]		
55	do	16	16	[3]		

[1] Rolled or swedged-in hoops.
[2] Each removable head drum body must have three rolled or swedged-in hoops with the centerline of one not more than 3 inches from the top curl.
[3] A drum of 5¼ gallons marked capacity is authorized for shipment of the commodity specified in § 173.353(d) of this chapter.

(b) Steel sheets of specified gauges shall comply with the following:

Gauge No.	Nominal thickness[1] (inch)	Minimum thickness[1] (inch)
16	0.0598	0.0533
18	.0478	.0428
20	.0359	.0324
24	.0239	.0209

[1] Thickness shall be measured at any point on the sheet not less than ¾ inch from an edge.

§ 178.115-7 Convex heads.

(a) Convex (crowned) heads, not extending beyond level of chime, required for drums of 25 gallons capacity or over; minimum convexity of ⅝ inch required.

§ 178.115-8 Closures.

(a) Adequate to prevent leakage; gaskets required.

(b) Closing part (plug, cap, plate, etc., see Note 1) must be of metal as thick as prescribed for head of container; this not required for containers of 12 gallons or less when the opening to be closed is not over 2.7 inches in diameter. If unthreaded cap is used it must be provided with outside sealing devices which cannot be removed without destroying the cap or sealing device.

NOTE 1: This does not apply to cap seal over a closure which complies with all requirements.

(c) For closure with threaded plug or cap, the seat (flange, etc.) for plug, or cap, must have 3 or more complete threads; two drainage holes of not over 5/64 inch diameter are allowed. Plug, or cap, must have sufficient length of thread to engage 3 threads when screwed home with gasket in place. Threaded closures having fewer threads are authorized for containers having a capacity of 12 gallons or less when such closures are approved by the Bureau of Explosives upon proof of satisfactory tests.

(1) Closures of screw-thread type or closed by other positive means, of any material or design, may be authorized by the Bureau of Explosives for use, upon satisfactory proof of efficiency.

(d) Full removable head drums over 5 gallons capacity must be closed by means of 12 gauge bolted ring with drop forged lugs, one of which is threaded, and having ⅜ inch bolt and nut for drums not over 30 gallons capacity and ½ inch bolt and nut for drums over 30 gallons capacity. Five gallon drums must be of lug type closure with cover having at least 16 lugs. Equally efficient types of closures are authorized upon demonstration and proof of satisfactory tests to representative of Bureau of Explosives.

[29 FR 18893, Dec. 29, 1964, as amended by Order 67, 30 FR 7425, June 5, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

§ 178.115-9 Defective containers.

(a) Leaks and other defects to be repaired by method used in constructing container, not by soldering.

§ 178.115-10 Marking.

(a) Marking on each container by embossing on head except that such embossment must be on the permanent head for drums having removable heads, with raised marks, or by embossing or die stamping on footring on drums equipped with footrings, or on metal plates securely attached to drum by brazing or welding not less than 20 percent of the perimeter, as follows:

(1) DOT-17C. The letters STC; located near the DOT mark to indicate "single-trip container." In addition, when the container is of stainless steel, the type of steel used in body and head sheets as identified by American Iron and Steel Institute type number, and also the letters HT following steel designation on containers subjected to stress-relieving or heat-treatment during manufacture (for example, DOT-17C-304 or DOT-17C-304 HT as applicable) shall be shown.

(2) Name or symbol of person making the marks specified in paragraph (a)(1) of this section. Symbol, if used, must be registered with the MTB-TSC.

(3) Gauge of metal in thinnest part, rated capacity in gallons, and year of manufacture (for example, 14-55-50). When gauge of metal in body differs from that in head, both must be indicated with slanting line between and with gauge of body indicated first (for example 14/12-55-50 for body 14 gauge and head 12 gauge).

[29 FR 18893, Dec. 29, 1964, as amended by Order 66, 30 FR 5755, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 178-40, 41 FR 38181, Sept. 9, 1976]

§ 178.115-11 Size of markings.

(a) Size of markings (minimum): ¼" high for 33 gallons or less, ¾" for over 33 and not over 55 gallons.

§ 178.115-12 Type tests.

(a) Samples taken at random and closed as for use, shall withstand prescribed tests without leakage. Tests to be made of each type and size by each company starting production and to be repeated every 4 months. Samples last tested to be retained until further tests are made or for 1 year, whichever period is shorter. The type tests are as follows:

(1) Test by dropping, filled with water to 98 percent capacity, from height of 4 feet onto solid concrete so as to strike diagonally on chime, or when without chime seam, to strike on other circumferential seam; also additional drop test on any other parts which might be considered weaker than the chime. Closing devices and other parts projecting beyond chime or rolling hoops must also be capable of withstanding this test.

(2) Hydrostatic pressure test of 40 pounds per square inch sustained for 5 minutes; except that full removable head drums must sustain 20 pounds per square inch.

[29 FR 18893, Dec. 29, 1964, as amended by Order 66, 30 FR 5755, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

§ 178.115-13 Leakage test.

(a) Each container shall be tested, with seams under water or covered with soapsuds or heavy oil, by interior air pressure of at least 15 pounds per square inch. Equally efficient means of testing are authorized upon demonstration and proof of satisfactory tests to representative of Bureau of Explosives. Leakers shall be rejected or repaired and retested. Removable head containers not required to be tested with heads in place except that samples taken at random and closed as for use, of each type and size, must be tested at start of production and repeated every 4 months. Samples last tested to be retained until further tests are made or for 1 year, whichever period is shorter.

[Order 66, 30 FR 5755, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

Marked capacity not over (gallons)	Type of container	Minimum thickness, uncoated sheets (gauge)		Rolling hoops	
		Body sheet	Head sheet	Type	Minimum size (gauge or inch)	Minimum weight (pounds per foot)
5	Straight side	24	24	None		
10	do	22	22	do		
30	do	[1]19	[1]19	(2)		
55	do	[1]18	18	(2)		

[1] Rolled or swedged-in hoops.
[2] 20 gauge authorized.

APPENDIX H

CALIFORNIA HAZARDOUS WASTE MANAGEMENT PROGRAM

OUTLINE COMPARISON

OF

FEDERAL & STATE

HAZARDOUS WASTE MANAGEMENT REGULATIONS

Explanation of abbreviations:

EPA	-United States Environmental Protection Agency
DOHS	-California State Department of Health Services
CFR	-United States Code of Federal Regulations
Cal. Ad.	-California Administrative Code
DOT	-U.S. Department of Transportation

Regulations for TRANSPORTERS of HAZARDOUS WASTE

FEDERAL	STATE
•Obtain EPA Transporters ID#.	Obtain Hazardous Waste Haulers Permit from DOHS.
•Comply with Manifest system	•Same-plus send copies of out-of-state shipment manifests to DOHS.
•Deliver entire shipment of Hazardous Waste only to designated facility.	same
•Retain Manifest copies for three years.	same
•Comply with DOT (U.S. Dept. of Transportation) Regulations pertaining to reporting of discharges and/or spills.	•Notify DOHS within 24 hours by telephone or telegraph of an accident involving Hazardous Waste. Send copy of DOT report to the California Highway Patrol.
•Clean-up any Hazardous Waste discharged during transport.	•Pick-up all Hazardous Waste and waste saturated soil which was spilled or caused during transport. Deliver to Class I disposal site.

Regulation for OPERATORS OR OWNERS of TREATMENT, STORAGE AND/OR DISPOSAL FACILITES.

FEDERAL	STATE
•Obtain a Permit from EPA to operate a Hazardous Waste Facility. (See 40 CFR 264-265 & 122 to 124.)	•Obtain State Hazardous Waste Facilities Permit from DOHS. (See Cal. Ad., Div. 4, commencing with Section 66370.)
•For existing Facilites Part A of the Federal Permit must be filed prior to Nov. 19, 1980.	•Existing Facilities must have valid State Permit at this time.

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
SACRAMENTO, CA 95814
(916) 322-2337

JULY 1980

TO: Interested Persons

FROM: Hazardous Materials Management Section
714 P Street
Sacramento, CA 95814

SUBJECT: NOTICE OF INTENT TO APPLY FOR INTERIM AUTHORIZATION TO ADMINISTER A STATE HAZARDOUS WASTE PROGRAM PURSUANT TO SECTION 3006(c) OF THE RESOURCE CONSERVATION AND RECOVERY ACT OF 1976 (42 USC 6901 ET SEQ.) AND IMPLEMENTING REGULATIONS.

The State of California Department of Health Services and the State Water Resources Control Board propose to apply for Phase I Interim Authorization to administer a state hazardous waste regulatory program in lieu of, and corresponding to, the Federal hazardous waste program authorized under Public Law 94-580, the Resource Conservation and Recovery Act of 1976 (RCRA), as amended (42 USC 6901 et seq.). A public meeting will be held in Sacramento on July 30, 1980 to consider public comments about this proposal. More specific details about the meeting appear elsewhere in this notice.

RCRA requires the U. S. Environmental Protection Agency (EPA) to institute a national program to control hazardous waste. Specific regulations for implementing RCRA are set forth in the Code of Federal Regulations (40 CFR Parts 260 to 266 and 122 to 124) and become effective November 19, 1980. Section 3006 of RCRA specifically provides for a state to operate its own hazardous waste program in lieu of the Federal program, provided the state meets specific minimum requirements and, after application, achieves authorization by EPA. Congress has clearly demonstrated a preference for states to assume responsibility for controlling hazardous waste within their borders and has made Federal financial assistance available to states for developing state programs.

Title 40, CFR, Part 123 establishes minimum requirements which state hazardous waste programs must meet in order to receive EPA approval. These regulations were written to ensure consistency in hazardous waste management from state to state. The following timetable has been established by EPA for implementation of Federal standards and authorization of state programs.

- Phase I, effective November 19, 1980:
  - Identification and listing of hazardous wastes;
  - Standards for generators of hazardous waste;
  - Standards for transporters of hazardous waste;
  - Interim status standards for owners and operators of facilities that treat, store, or dispose of hazardous waste; and
  - Phase I Interim Authorization of state hazardous waste programs meeting Phase I minimum requirements.

- Phase II, effective Spring 1981:

  - Permanent status standards for owners and operators of facilities that treat, store, or dispose of hazardous waste; and
  - Phase II Interim Authorization of state hazardous waste programs meeting Phase II minimum requirements.

- Final Phase, effective 24 months after Phase II:

  - Final authorization of state hazardous waste programs meeting minimum requirements and determined by EPA to be equivalent to and consistent with the Federal program.

The California State Department of Health Services (DOHS) in cooperation with the State Water Resources Control Board (SWRCB) is in the final stages of preparing the State's application to EPA for Phase I Interim Authorization. Thus far, the State believes that the existing State Hazardous Waste Program, authorized under the California Health and Safety Code, Section 25100 et seq., in conjunction with the State Water Resources Control Program carried out pursuant to the Porter-Cologne Water Quality Control Act, California Water Code, Section 1300 et seq., is substantially equivalent to the Federal program interim authorization requirements with four exceptions:

- Existing State law and regulations require hazardous waste generators and disposal site operators to report to DOHS on a monthly basis, certain information about hazardous waste generation and disposal activities. New Federal standards, however, require generators and disposal site operators to file certain reports on an annual basis and require generators to monitor the transportation and disposal of their respective waste loads and to report within 45 days of expected disposal dates, waste loads not reaching designated disposal facilities. (40 CFR refers to such reports as "exception reporting".)

  DOHS proposes to seek changes in existing law and regulations as needed to require such exception reporting by generators and to require continued monthly as well as annual reporting to DOHS.

- Existing State law and regulations require that hazardous waste generators, transporters, and facility operators utilize a hazardous waste manifest to meet certain waste identification, transportation, recordkeeping and reporting requirements. Manifest format and usage is currently prescribed by DOHS.

  DOHS proposes to seek changes in existing law and regulations as needed to require the use of a form consistent with: (1) EPA and Federal Department of Transportation standards; and (2) DOHS hazardous waste identification standards.

- Existing State law and regulations require a hazardous waste facility permit applicant to obtain waste discharge requirements from a Regional Water Quality Control Board prior to being issued a hazardous waste facility permit. Such waste discharge requirements are issued only after the public has been allowed the opportunity to review and comment on proposed requirements. Also, in California, public hearings are usually

held during various local land use permit proceedings. DOHS is currently not required to hold additional public hearings prior to issuance of a hazardous waste facility permit.

Certain RCRA standards: (1) require an opportunity for public comment and, if sufficient public interest is shown, a public hearing be held, prior to the issuance of a hazardous waste facility permit; and (2) establish facility siting, monitoring and operating standards for permitted facilities.

DOHS proposes to seek changes in existing law and/or regulations as needed to require public hearings on proposed hazardous waste facility permits during final permit proceedings.

- Existing State law and regulations require persons discharging, or proposing to discharge, a waste which could affect the quality of waters in the State to file a report of the discharge with the Regional Water Quality Control Board responsible for the affected region. The Regional Board in turn prescribes certain requirements for the waste discharge to protect water quality and other beneficial uses of the receiving surface or ground water.

  SWRCB proposes to review State policy and practices for prescribing waste discharge requirements for facilities subject to regulation under RCRA to determine actions necessary to bring State facility standards and ground water monitoring, closure and post closure and financial responsibility requirements into compliance with new RCRA regulations.

A public meeting to consider the proposal to apply for State program authorization and the four proposed program changes noted above, will be held in Room 102, State Office Building Number 9, 744 P Street, Sacramento, California, on July 30, 1980, at 10:00 A.M. and will continue until all present are heard.

All interested persons wishing to comment upon these proposals are invited to appear at the public meeting to present their views. Written comments may be presented at the meeting or submitted by July 30, 1980, in person to the California State Department of Health Services, Hazardous Materials Management Section, 1420 - 5th Street, Room 140, Sacramento, California, or mailed to the California State Department of Health Services, Hazardous Materials Management Section, 744 P Street, Sacramento, California 95814.

Oral statements will be received and considered, but for accuracy of the record, all such statements should be submitted in writing. Oral statements should summarize extensive written material so that there will be time for all interested persons to be heard. Persons submitting written material are encouraged to bring additional copies for the use of the meeting panel or other interested persons.

All comments received by July 30, 1980, or presented at the public meeting will be considered in the development of proposed program changes for the State's Phase I Interim Authorization Application to be submitted to EPA.

APPENDIX I

MAJOR ELEMENTS OF AN ENVIRONMENTAL IMPACT STATEMENT/REPORT

APPENDIX I

MAJOR ELEMENTS OF AN ENVIRONMENTAL IMPACT STATEMENT/REPORT

The major elements to be included in an Environmental Impact Statement/Report are shown in Figure I-1. The following is a detailed description of these elements:

- Describe the present conditions - Requires a description of present conditions of the proposed project area, including specifics on surrounding terrain and ecosystems, existing and proposed land use, and other existing environmental and cultural features. A description of the project objective should be provided, including local, state, or federal plans, and social economic, and natural environmental goals of the area in question. Information and data adequate to permit careful assessment of the project area by commenting agencies are necessary. Where relevant, maps and/or photographs should be provided.
- Describe the alternative actions - Requires the responsible agency to study, develop, and describe appropriate alternatives relevant to the proposed objective. Consideration should be given not only to engineering, design, locational, institutional, and operational alternatives, but also to maintaining the status quo. Information and

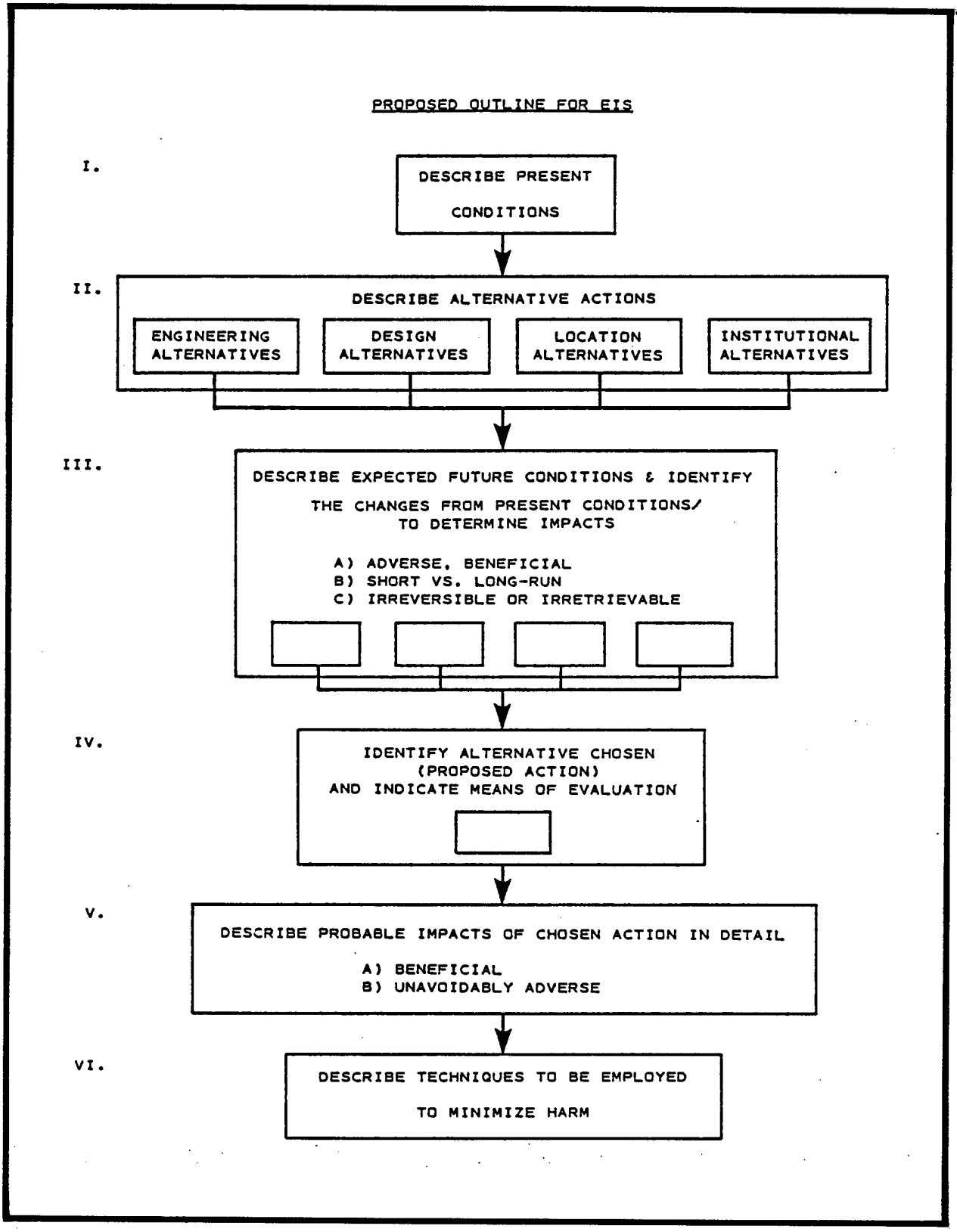


Figure I-1. Proposed Outline for Environmental Impact/ Statement/Report

data adequate to permit careful assessment of the characteristics of each alternative by commenting agencies is necessary. Where relevant, maps and/or photographs should be provided.

- Describe the probable impacts of each alternative - Requires a description of primary and secondary impacts, including beneficial and detrimental impacts on aesthetic, socioeconomic, and ecological systems; also requires a description of the environmental interrelationships in the direct project area and the total affected area. In particular, long-range impacts are to be evaluated regarding the extent to which actions taken now are decreasing sustained yield or carrying capacity of environmental components. Actions which cannot be withdrawn or reversed must also be specifically highlighted.
- Identify the alternative chosen, and indicate the evaluations which led to that choice - Requires a statement of the action to be proposed, including a more detailed development of its characteristics. This choice implies tradeoffs which must be considered both in terms of their relative values and the relationship of these values to particular constituencies.
- Describe the probable impacts of the proposed action in detail - Requires a more detailed description of probable effects, both beneficial and adverse. In particular, those adverse effects which will ensue even from the best

alternative, and which are therefore unavoidable in this context, should be highlighted. Evidence of compliance with local, state, and federal environmental control regulations should be provided.

- Describe the techniques for minimizing harm - Requires a description of actions taken to minimize harm, including techniques employed to curb air pollution, water pollution, noise, disturbance of economic and social patterns, and visual pollution. This description applies to both the construction and the operation of the facility.

APPENDIX J

CITY OF OXNARD RESOLUTIONS FOR CALCULATING WASTEWATER CHARGES

RESOLUTION NO. 7424

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OXNARD ADJUSTING FEES AND CHARGES FOR THE USE OF, AND FOR SERVICES RELATING TO, THE CITY WASTEWATER SYSTEM.

WHEREAS, the City Council of the City of Oxnard as adopted, Chapter 25 to the Code of the City of Oxnard to regulate wastewater discharges and other use of the City's wastewater system; and

WHEREAS, provision is therein made for fees and charges to be set and scheduled by councilmanic resolution; and

WHEREAS, pursuant to Chapter 25 of the Code of the City of Oxnard, Resolution 7070 was adopted to set such fees in accordance with the provisions of said Chapter 25, and

WHEREAS, the City intends to repeal said resolution and adopt a new resolution adopting new fees and charges for the use of and for services relating to the City wastewater system; and

WHEREAS, City of Oxnard Finance Department has prepared City of Oxnard Wastewater Rate recommendations for fiscal year 1978-79 dated June 1978 (Revised June 20, 1978), which report establishes the basis for the fees and charges set forth herein and which report is on file in the Office of the City Clerk of the City of Oxnard; and

WHEREAS, regulations of the Federal Environmental Protection Agency (EPA) and the California State Water Resources Control Board (SWRCB) "revenue program" guidelines dictate that the City's wastewater service charges conform to grant requirements; and

WHEREAS, the EPA and SWRCB revenue program guidelines require equitable charges for all users.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Oxnard that the following fees shall be charged and collected for the use of, and for other privileges and services relating to, the wastewater system of the City of Oxnard:

I. Monthly Service Charge for use.

A. City of Oxnard User Charge for Wastewater System Services

The rate for Oxnard user classes or individual users of the Wastewater system shall be calculated with the "City of Oxnard User Charge Formula" (hereinafter known as the Oxnard Formula) as follows:

$$OMUC = h(La) + j(OVd) + m(OBp) + n(OSp) + p(Vm) + q(Bm) + r(Sm) + C + Q$$

Where:

OMUC = Oxnard monthly User charge in dollars ($)

La = area of wastewater users property in acres

OVd = maximum PSDWF in millions of gallons per day which has occurred for a billing period during the preceding 12 mo.

OBp = maximum BOD discharge in thousands of pounds per day which has occurred for a billing period during the preceeding 12 mo.

OSp = maximum SS discharge in thousands of pounds per day which has occurred for a billing period during the preceding 12 mo.

Vm = monthly wastewater discharge in millions of gallons

Bm = monthly BOD discharge in thousands of pounds (k lbs)

Sm = monthly SS discharge in thousands of pounds (k lbs)

C = monthly cost per customer - $1.32

Q = billing cost per bill in dollars - $3.22 for individual user charge calculations or $0.22 for flat rate bills and for bills based on water use only

h, j, m, n, p. q and r are unit cost coefficients established as follows:

	Effective 8-29-78	Effective 12-29-78
h =	$ 3.7327	$ 3.7327
j =	3,077.1661	3,077.1661
m =	103.9969	103.9969
n =	191.4530	191.4530
p =	340.5436	442.3572
q =	36.9599	44.6698
r =	60.3766	75.5532

1. Formula Users (industrial & commercial)

The monthly user charge for formula users shall be calculated using the Oxnard Formula listed above. Industrial and commercial users billed by the Oxnard Formula method shall be those so designated by the Director of Public Works. For those Formula Users that do not provide metered wastewater flow data, the wastewater flow shall be assumed to be 90% of water consumed. For those users that provide engineering data acceptable to the Public Works Director showing a different percentage, the wastewater flows will be based on the data.

2. Non-Formula Users (industrial, commercial & governmental)

The monthly user charge for non-residential users of the system who are not classified as formula users by the Director of Public Works shall be as follows:

Commercial Enterprise Category	Standard Discharge mg/l		Rate, Dollars per Ccf of Water Used	
	BOD	SS	Effective 8-29-78	Effective 12-29-78
Restaurant	599.6	749.8	$ 0.750	$ 0.889
Commercial laundry excluding laundromats & excluding Mission Linen	443.5	240	0.532	0.614
Other	300	300	0.528	0.632

The minimum monthly commercial charge shall be the same as the residential charge for multiple dwelling units. These commercial rates are based on the expected flows and qualities of flows for each commercial discharger class using the Oxnard Formula. Individual commercial users whose discharges are materially different from those for their assigned class may be subject to charges and monitoring requirements incidental to using the Oxnard Formula. The rate per hundred cubic feet (Ccf) of water used is based on the assumption that 85 percent of the water consumed is returned to the wastewater system; and the director shall have the right to review the water consumption of any

metered user of the wastewater system, and to adjust the rate based on the average water consumption over a reasonable period of time.

3. Residential Users

Monthly residential user charges by type of dwelling units are as follows:

Single family unit. The monthly rate for each single family dwelling unit in a single building shall be $8.21 effective 8-29-78 and $9.93 effective 12-29-78 per dwelling unit. Provided, however, if a single family dwelling unit consumes less than 1000 cubic feet of City metered water during a bi-monthly billing period, the monthly service charge shall be the same as the rate charged for a multiple dwelling unit.

Multiple units-mobile home spaces. The monthly rate for each dwelling unit in a building containing two or more dwelling units, and for each mobile home space used, intended or designed for occupancy as a dwelling unit, shall be $5.76 effective 8-29-78 and $7.04 effective 12-29-78 per dwelling unit or mobile home space.

4. Non-metered water users

Except as provided in sub-section 3 for domestic water users, other non-metered water users, including commercial and industrial users, shall pay a monthly rate as determined by the director and based upon the monthly rate charged a metered water user of comparable size and character of use, provided, however, that the minimum monthly charge shall be the same as that charged for a multiple family dwelling unit.

5. Wastewater system rate for wastewater treated by another agency

Where wastewater is collected by the City and is accepted by another agency for transmission, treatment and disposal, the monthly wastewater system rates for the usage of such system shall be equal at least to the rate charged by such agency for transmission, treatment and disposal of such wastewater, anything to the contrary herein notwithstanding.

IV. Permit Fees (Oxnard Customers)

A. Waste hauler's permit, annually, $45.00

B. Industrial waste discharge permit.

(to offset cost of monitoring by City)

	FREQUENCY OF MONITORING	ANNUAL PERMIT FEE
Class I		
Hospitals Commercial Establishments Restaurants, Hotels, Recreational	Semi-Annually	$50/yr.
Class II		
Electronic & Electrical Parts Mgfr. Machine Shops Metal Fabrications Beverage Bottling Textile Mgfr. Ceramic Mgfr. General Mgfr. not otherwise Classified	Quarterly	$80/yr.
Class III		
Plastic Mgfr. & Fabrication Paint Mgfr. Commercial Laundries Petroleum Production Metal Plating Dairy Products Bakeries	Monthly	$130/yr.
Class IV		
Canneries Food Processing Chemical Mgfr. Distilleries Citrus by-products Paper Mgfr. Tannery Rubber Products Petroleum Refineries	Monthly	$270/yr.

V. Fee for Appeal

For each appeal to City Council from director's ruling for consideration, a fee of $50 will be charged.

BE IT FURTHER RESOLVED that the fees hereinabove provided shall be effective and shall be applied as follows:

A. Effective dates. The monthly service charge for use of the City wastewater system, additional charges for outside City service, inside City service to non-metered water users, wastewater acceptance by another agency, and unusual wastewater, permit fees and fees for appeal

shall be effective August 29, 1978, or as specified herein if different effective dates are specified.

B. Permits. The permits specified in Section IV shall be granted and renewed on an annual basis effective January first of each year. Application for permit and permit renewal shall be made in accordance with Section 25-25 and in accordance with regulations of the director promulgated to implement the section. Permit fees may be pro-rated by the director of permit periods of less than one calendar year, provided that all or part of a calendar quarter shall be considered as a full quarter.

C. Billing procedure for monthly service charge for use of City Wastewater System. Bills shall be computed according to the rates in effect and the number of days in the service period at each rate.

BE IT FURTHER RESOLVED THAT the provisions of resolution 7070 except those that relate to Regional Wastewater Treatment and Disposal Facility user charges and billing procedures are repealed upon the effective date of this resolution.

Passed and adopted this 29th day of August 1978, by the following vote:

AYES: Councilmen Kato, Lopez, Maxwell, Miller, Takasugi.

NOES: None.

ABSENT: None.

Tsujio Kato D.D.S.
Tsujio Kato, D.D.S.
Mayor

ATTEST:

Mabi Covarrubias
Mabi Covarrubias
Deputy City Clerk

RESOLUTION NO. 7683

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OXNARD ADJUSTING FEES AND CHARGES FOR THE USE OF, AND FOR SERVICES RELATING TO, THE CITY WASTEWATER SYSTEM FOR FORMULA USERS.

WHEREAS, the City Council of the City of Oxnard as adopted, Chapter 25 to the Code of the City of Oxnard to regulate wastewater discharges and other use of the City's wastewater system; and

WHEREAS, provision is therein made for fees and charges to be set and scheduled by councilmanic resolution; and

WHEREAS, pursuant to Chapter 25 of the Code of the City of Oxnard, Resolution 7424 was adopted to set such fees in accordance with the provisions of said Chapter 25, and

WHEREAS, the City intends to repeal the portion of the said resolution referring to formula users and adopt a new resolution adopting new fees and charges for formula customers use of and for services relating to the City wastewater system; and

WHEREAS, the City of Oxnard Finance Department has prepared City of Oxnard Wastewater Rate recommendations for fiscal year 1979-80 dated June 1979, which report establishes the basis for the fees and charges set forth herein and which report is on file in the Office of the City Clerk of the City of Oxnard; and

WHEREAS, regulations of the Federal Environmental Protection Agency (EPA) and the California State Water Resources Control Board (SWRCB) "revenue program" guidelines dictate that the City's wastewater service charges conform to grant requirements; and

WHEREAS, the EPA and SWRCB revenue program guidelines require equitable charges for all users.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Oxnard that the following fees shall be charged and collected for the use of, and for other privileges and services relating to, the wastewater system of the City of Oxnard:

I. Monthly Service Charge for use.

A. City of Oxnard User Charge for Wastewater System Services

The rate for Oxnard user classes or individual users of the Wastewater system shall be calculated with the "City of Oxnard User Charge Formula" (hereinafter known as the Oxnard Formula) as follows:

$$OMUC = h(La) + j(OVd) + m(OBp) + n(OSp) + p(Vm) + q(Bm) + r(Sm) + C + Q$$

Where:

OMUC = Oxnard monthly User charge in dollars ($)

La = area of wastewater users property in acres

OVd = maximum PSDWF in millions of gallons per day which has occurred for a billing period during the preceding 12 mos.

OBp = maximum BOD discharge in thousands of pounds per day which has occurred for a billing period during the preceding 12 mos.

OSp = maximum SS discharge in thousands of pounds per day which has occurred for a billing period during the preceding 12 mos.

Vm = monthly wastewater discharge in millions of gallons

Bm = monthly BOD discharge in thousands of pounds (k lbs)

Sm = monthly SS discharge in thousands of pounds (k lbs)

C = monthly cost per customer - $1.32

Q = billing cost per bill in dollars - $3.40 for individual user charge calculations or $0.40 for flat rate bills and for bills based on water use only.

h, j, m, n, p, q and r are unit cost coefficients established as follows:

	Effective 06-30-79
h =	$ 2.8090
j =	839.6772
m =	203.3205
n =	290.7599
p =	442.3572
q =	58.5570
r =	95.4590

Formula Users (industrial & commercial)

The monthly user charge for formula users shall be calculated using the Oxnard Formula listed above. Industrial and commercial users billed by the Oxnard Formula method shall be those so designated by the Director of Public Works. For those Formula Users that do not provide metered wastewater flow data, the wastewater flow shall be assumed to be 90% of water consumed. For those users that provide engineering data acceptable to the Public Works Director showing a different percentage, the wastewater flows will be based on the data.

Billing procedure for monthly service charge for use of City Wastewater system. Bills shall be computed according to the rates in effect and the number of days in the service period at each rate.

BE IT FURTHER RESOLVED THAT the provisions of resolution 7424 that relate to Formula Users (industrial and commercial) be repealed upon the effective date of this resolution.

Passed and adopted this 26th day of June 1979, by the following vote:

AYES: Councilmen Maxwell, Miller, Takasugi, Lopez

NOES: None

ABSENT: Councilman Kato

Mayor Pro Tem

ATTEST:

Mabi Covarrubias

Mabi Covarrubias
Deputy City Clerk

RESOLUTION NO. 7684

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OXNARD ADJUSTING FEES AND CHARGES FOR THE USE OF, AND FOR SERVICES RELATING TO, THE CITY REGIONAL WASTEWATER SYSTEM.

WHEREAS, the City Council of the City of Oxnard has adopted Chapter 25 to the Code of the City of Oxnard to regulate wastewater discharges and other use of the City's wastewater system; and

WHEREAS, provision is therein made for fees and charges to be set and scheduled by councilmanic resolution; and

WHEREAS, pursuant to Chapter 25 of the Code of the City of Oxnard, Resolution 7423 was adopted to set such fees in accordance with the provisions of said Chapter 25; and

WHEREAS, the City intends to repeal said resolution and adopt new resolution adopting new fees and charges for the use of and for services relating to the City wastewater system; and

WHEREAS, City of Oxnard Finance Department has prepared Regional Wastewater Rate recommendations for fiscal year 1979-80 dated June 1979 which report establishes the basis for the fees and charges set forth herein and which report is on file in the office of the City Clerk of the City of Oxnard; and

WHEREAS, regulations of the Federal Environmental Protection Agency (EPA) and the California State Water Resources Control Board (SWRCB) "revenue program" guidelines dictate that the City's wastewater service charges conform to grant requirements; and

WHEREAS, the City has agreed to and has established a Regional Treatment & Disposal Facility to provide Wastewater Treatment and Disposal Services to users of the City, the City of Port Hueneme, the Naval Construction Battalion Center (CBC) and the Naval Pacific Missile Test Center (PMTC); and

WHEREAS, the EPA and SWRCB revenue program guidelines require equitable charges for all users.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Oxnard that the following fees shall be charged and collected for the use of, and for other privileges and services relating to, the Regional Wastewater Treatment System of the City of Oxnard:

I. Monthly Service Charge for use.

A. Regional Treatment & Disposal Facility User Charge

The rate for regional users (Oxnard, Port Hueneme, CBC, and PHTC) of this facility shall be calculated with the "Regional User Charge Formula" as follows:

$$RMUC = a\,(Vw) + b(RVd) + c\,(RBp) + d\,(RSp) + e\,(Vm) + f\,(Bm) + g\,(Sm) + K$$

Where:

RMUC = regional monthly user charge in dollars ($)

Vw = contracted for Peak Wet Weather Flow (PWWF) capacity in million gallons per day (mgd)

RVd = contracted for Peak Seasonal Dry Weather Flow (PSDWF) capacity in million gallons per day (mgd)

RBp = contracted for Biochemical Oxygen Demand (BOD) capacity in thousand pounds per day

RSp = contracted for Suspended Solids (SS) capacity in thousand pounds per day (k lbs/day)

Vm = monthly wastewater discharge in millions of gallons

Bm = monthly BOD discharge in thousands of pounds (k lbs)

Sm = monthly SS discharge in thousands of pounds (k lbs)

K = billing cost - currently $3.00

a, b, c, d, e, f, and g are unit cost coefficients established as follows:

<u>Effective 06-30-79</u>

a = $ 15.0333

b = 10.4957

c = 6.972

d = 10.1072

e = 307.9365

f = 36.6701

g = 66.8376

B. Billing procedure for monthly service charge for use of Regional Wastewater Treatment System. Bills rendered for service periods beginning on or after the effective dates of rate increases specified herein shall be at the rates specified.

BE IT FURTHER RESOLVED THAT the provisions of Resolution 7423 that relate to Regional Treatment and Disposal Facility user charges and billing procedures are repealed upon the effective date of this Resolution.

Passed and adopted this 26th day of June 1979, by the following vote:

AYES: Councilmen Maxwell, Miller, Takasugi, Lopez

NOES: None

ABSENT: Councilman Kato

Dan Takasugi
Mayor Pro Tem

ATTEST:

Mabi Covarrubias
Mabi Covarrubias
Deputy City Clerk